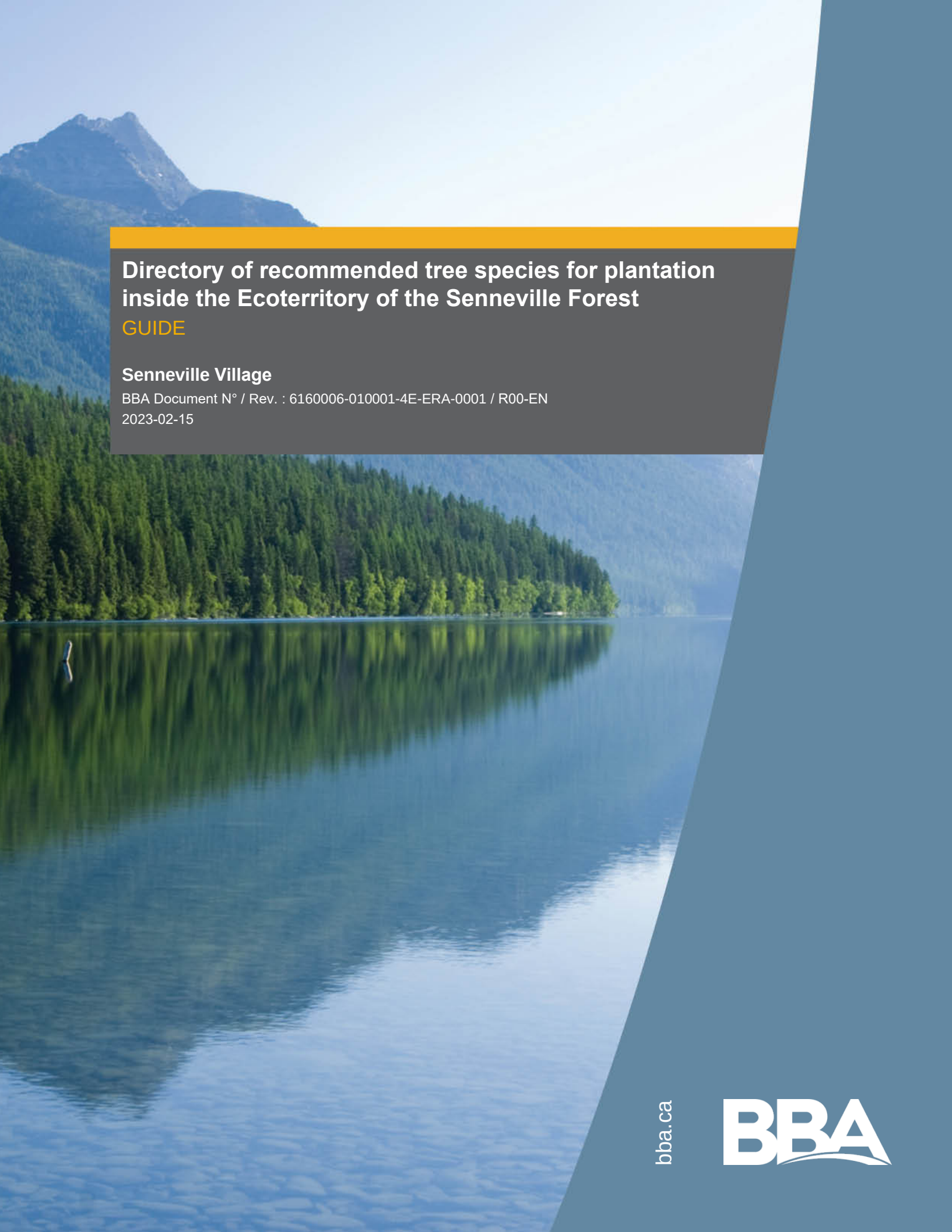

Directory of recommended tree species for plantation inside the Ecoterritory of the Senneville Forest

GUIDE

Senneville Village

BBA Document N° / Rev. : 6160006-010001-4E-ERA-0001 / R00-EN
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Village de Senneville
Senneville, QC

Guide

Directory of recommended tree species for plantation inside the Ecoterritory of the Senneville Forest

BBA Document N° / Rev. : 6160006-010001-4E-ERA-0001 / R00-EN
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FINAL

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1. CONTEXT

Approximately 94% of the terrestrial territory of the Senneville Village is contained inside of the Ecoterritory of Senneville Forest, as determined by municipal by-law n° 433 concerning the cadastral designation of the lots that are part of the Ecoterritory of Senneville Forest, effective in April 2013.

Although an Ecoterritory is not a protected area in the strict sense, all projects undertaken inside the Ecoterritory must tend to respect the defined conservation and development objectives, including preservation of its biodiversity and the integrity of the forest landscape.

The Senneville Village wishes to create a tool to better frame this protection objective. For this purpose, BBA received the mandate to produce a directory of recommended tree species to use for plantation inside the Senneville Village's territory, to guide its citizens in their choices of trees to plant on their property, be it a new construction, a landscaping project, or to replace a dead tree taken down because of the Emerald ash borer.

1.1 Forests stands in the Ecoterritory of Senneville Forest

Montreal's 2004 policy for the protection and enhancement of natural environments describes the Ecoterritory of Senneville Forest as composed of mature forest stands, and a few rare forests stands such as beech forests, red oak forests, and eastern hemlock forests, some of which could be designated as exceptional forest ecosystems (EFE). These natural landscapes host rare flora species and contribute to the maintenance of the largest forest located on Montreal's territory.

Inside this Ecoterritory is the natural reserve of the Senneville Forest, a protected area covering 16,67 ha that is protecting an exceptional century old forest composed of sugar maple, American beech, and eastern hemlock.

This Ecoterritory also contains Senneville's migratory bird sanctuary (MBS), a protected area created in 1936 by the federal government to preserve the forested landscape in order to protect a large variety of birds for both nesting season and migration. This MBS is described as having a large diversity of tree species, such as red maple, sugar maple, red ash, white elm, trembling aspen, white and black willow, swamp white oak, common hackberry, and basswood.

Field studies were conducted by Biofilia in 2012 to better characterise the forest cover in various sectors of the Ecoterritory in the Senneville Village. The following Table 1 contains the indigenous tree species inventoried, excluding plantations and introduced species.

Table 1: Indigenous tree species inventoried in various sectors within Senneville's Ecoterritory

Sector	Tree species inventoried	
L.B. Pearson Forest	▪ Northern red oak ▪ Sugar maple ▪ Red maple	▪ American beech ▪ Basswood
McGill Forest	▪ Bitternut hickory ▪ Shagbark hickory ▪ Black cherry ▪ Northern red oak	▪ Sugar maple ▪ Red maple ▪ White elm ▪ Basswood
Canada real estate company	▪ Black cherry ▪ Northern red oak ▪ Red maple ▪ White ash	▪ Red ash ▪ Eastern cottonwood ▪ Eastern white pine ▪ Eastern white cedar
Senneville's cemetery	▪ Shagbark hickory ▪ Northern red oak ▪ Sugar maple ▪ Red ash ▪ American beech	▪ White elm ▪ Eastern hop-hombeam ▪ Large-toothed aspen ▪ Eastern white cedar
Orchards	▪ Shagbark hickory ▪ Northern red oak ▪ Silver maple ▪ Sugar maple	▪ Common hackberry ▪ White elm ▪ Basswood
Golf	▪ Yellow birch ▪ Northern red oak ▪ Sugar maple ▪ Red ash ▪ American beech	▪ White elm ▪ Red pine ▪ Balsam fir ▪ Basswood
West littoral (corridor)	▪ Shagbark hickory ▪ Sugar maple	▪ Red ash ▪ Large-toothed aspen
Philippe Corridor	▪ Shagbark hickory ▪ Sugar maple ▪ Red ash	▪ Common hackberry ▪ English elm ▪ Eastern hop-hombeam
Beaurivage Corridor	▪ Sugar maple ▪ Red ash	▪ White ash ▪ Black ash

Sector	Tree species inventoried	
Elm Corridor	▪ Shagbark hickory ▪ Bur oak ▪ Silver maple ▪ Sugar maple ▪ Red maple	▪ Red ash ▪ Black ash ▪ American beech ▪ White elm ▪ Basswood
Morgan	▪ Paper birch ▪ Yellow birch ▪ Shagbark hickory ▪ Black cherry ▪ Bur oak ▪ Northern red oak ▪ Silver maple ▪ Sugar maple ▪ Red maple ▪ Red ash ▪ Black ash	▪ American beech ▪ Butternut ▪ White elm ▪ English elm ▪ Large-toothed aspen ▪ Eastern cottonwood ▪ Eastern white pine ▪ pin rouge ▪ Eastern hemlock ▪ Basswood

Source : Ecoterritory of Senneville Forest– Senneville Village (Biofilia, April 2013)
https://villagesenneville.qc.ca/medias/files/pdf/Avis%20Avril2013_ecoterritoire-Senneville_fr.pdf

1.2 Urban planning by-laws related to the conservation of the forest cover

Section 7.1 of the zoning by-law n° 448 of Senneville Village contains numerous dispositions relating to the forest cover and trees protection. The main points of certain regulations are presented here, but the complete zoning by-laws as well as other urban planning by-laws can be found here: https://www.villagesenneville.qc.ca/en/89/urban-planning-bylaws.

By-law n° 452 concerning the Site Planning and Architectural Integration Program (SPAIP) also contains dispositions concerning the respect of environmental and natural characteristics of a site as well as interesting elements to be preserved, including components of the Ecoterritory, during development projects.

7.1.2: Authorized tree felling

Over the whole territory, tree felling is permitted only in a few cases. Among them, a tree must be cut down when it could propagate a disease or if it is an exotic invasive species and, in such cases, it must be replaced. A tree is defined by having a stem with a diameter of 10 centimeters, measured at 1.3 meters from the ground.

7.1.3 Conservation of trees or forest cover

This article sets a minimal percentage of trees to conserve within the Ecoterritory of the Senneville Forest, depending on the sector. Some sectors must conserve 90% of forest cover.

Within the buffer zone the Ecoterritory of Senneville Forest, which is the space between the limits of the Ecoterritory and the core or the corridors, the minimal percentage of tree conservation is set to 60%. Outside the Ecoterritory of Senneville Forest, the minimal percentage of tree conservation is set to 40%.

7.1.4 Replacement of a felled tree

Each tree that is a part of the minimal percentage to conserve but still has to be put down must be replaced.

To be considered a replacement tree, the tree must have at least a stem with a minimum diameter of 4 centimeters measured 0.3 meter from the ground. This tree must reach a minimal height of 5 meters when mature. In the case of a conifer, it must have a height of 1.2 meters when planted and reach a minimum height of 3 meters at maturity.

7.1.9 Prohibited planting

The plantation of any invasive tree and plant species are prohibited on the whole of the territory. This includes the following tree species:

- Manitoba maple or Boxelder (*Acer Negundo*);
- Norway maple (*Acer platanoides*);
- Siberian elm – often mistakenly called Chinese elm (*Ulmus pumila*);
- White poplar or Silver poplar (*Populus alba*);
- Black locust or false acacia (*Robinia pseudoacacia*).

1.3 Migratory bird sanctuary regulations

Article 10.1 of the *Migratory bird sanctuary regulations* stipulates that ‘No person shall, in a migratory bird sanctuary, carry on any activity that is harmful to migratory girds or the eggs, nests or habitat of migratory birds, except under authority of a permit’. This includes tree felling. The complete regulations can be found here: https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.%2C_c._1036/page-1.html .

2. LIST OF RECOMMENDED TREE SPECIES

Within Senneville Village, tree species recommended for planting are the indigenous species found in the Ecoterritory of Senneville Forest so as to maintain the characteristics and ecological value of this territory.

The only exclusions are the various species of ash in the context of the epidemic of Emerald ash borer which is decimating ash populations throughout Montréal and other regions in Québec. Other species may also be susceptible to certain diseases and harmful insects, for example the Dutch elm disease which has been decimating forests for a few decades. High species diversity within an area helps to diminish propagation risks of diseases and harmful insects between trees of the same species, while helping to increase the resilience and functions of ecosystems.

Twenty-four species are recommended and listed by alphabetical order, using their common names whether they are a conifer (5 species) or deciduous tree (19 species).

Each species is presented with following information:

- Common name;
- Scientific name;
- Height and width at maturity, reached after 20 or 30 years when the tree is planted in optimal growth conditions;
- Light exposition preferences;
- General aspect;
- General characteristics of the soil for optimal growth and resistance to compaction and de-icing salt;
- General comments;
- Picture.

This information comes from Hydro-Québec's tree and shrub directory, produced in 2005.

Although many varieties may be available for some of these species, it is recommended to prioritize the indigenous strain to maintain the integrity of the genetic patrimony of natural forests stands.

2.1 Conifer

Common name: Eastern white pine	
Latin name: *Pinus strobus*	
Height	20 m
Width	7 m
Exposition	Sun or partial shade
Aspect	Pyramidal and symmetrical shape, but becomes rounded and irregular with age
Soil	Sandy and average humidity, low pH, low tolerance to compaction and intolerance to de-icing salt
Comments	Low tolerance for urban conditions
Common name: Red pine	
Latin name: *Pinus resinosa*	
Height	24 m
Width	12 m
Exposition	Sun
Aspect	Ovoid shape, trunk is straight and bald
Soil	Mix of sand and loam, low humidity, low pH, low tolerance to compaction and de-icing salt
Comments	Low availability in nursery

Common name: Eastern hemlock	
Latin name: *Tsuga canadensis*	
Height	20 m
Width	12 m
Exposition	Shade or partial shade, sheltered from the wind
Aspect	Pyramidal shape, drooping branches with age
Soil	Mix of loam and sand, high to medium humidity, intolerance to compaction and de-icing salt
Common name: Balsam fir	
Latin name: *Abies balsamea*	
Height	20 m
Width	7 m
Exposition	Sun or partial shade
Aspect	Conical and narrow shape, horizontal branches
Soil	Varied soils, tolerance to compaction, low tolerance to de-icing salt
Comments	Low availability in nursery, suitable for large wet areas and rural sites

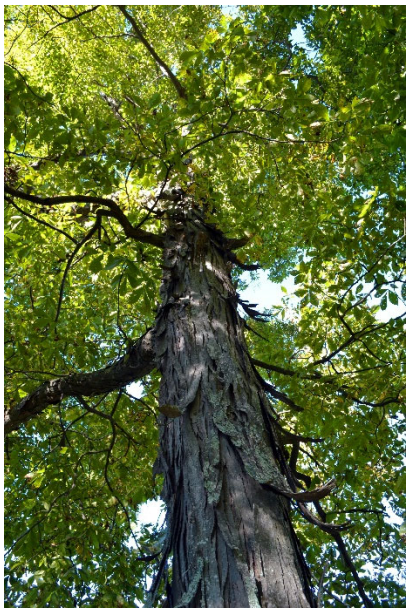
Common name: Eastern white cedar, cedar	
Latin name: *Thuja occidentalis*	
Height	12 m
Width	4 m
Exposition	Sun or partial shade
Aspect	Pyramidal shape, widening with age, irregular trunk
Soil	Varied soils, high moisture, tolerance to compaction, low tolerance to de-icing salt

2.2 Hardwood

Common name: Paper birch	
Latin name: *Betula papyrifera*	
Height	20 m
Width	14 m
Exposition	Sun
Aspect	Pyramidal shape, becomes rounded with age
Soil	Mix of loam and sand, medium humidity, low pH, low tolerance to compaction and to de-icing salt
Comments	Susceptible to urban pollution

Common name: Yellow birch	
Latin name: *Betula alleghaniensis*	
Height	20 m
Width	15 m
Exposition	Sun or partial shade
Aspect	Spreading pyramidal shape, spread and wide with age
Soil	Varied but high moisture soils, low tolerance to compaction and medium tolerance to de-icing salt
Comments	Low availability in nursery

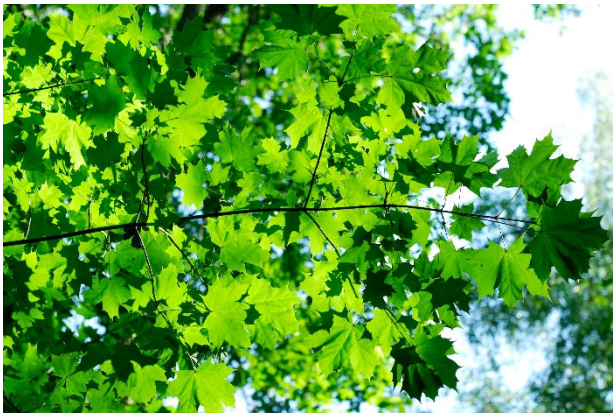
Common name: Bitternut hickory	
Latin name: *Carya cordiformis*	
Height	20 m
Width	10 m
Exposition	Shade or partial shade
Aspect	Erect shape, ovoid crown, wide and regular
Soil	Loamy soil with medium moisture, neutral pH, medium tolerance to compaction and low tolerance to de-icing salt
Comments	Low availability in nursery, susceptible to urban pollution

Common name: Shagbark hickory		
Latin name: *Carya ovata*		
Height	23 m	
Width	17 m	
Exposition	Shade or partial shade	
Aspect	Ovoid shape, short fan-shaped branches	
Soil	Loamy soil with medium moisture, medium tolerance to compaction and low tolerance to de-icing salt	
Comments	Low availability in nursery, susceptible to urban pollution, species at risk in Quebec	

Common name: Black cherry		
Latin name: *Prunus serotina*		
Height	20 m	
Width	10 m	
Exposition	Sun	
Aspect	Conical shape, then ovoid and irregular, drooping branches	
Soil	Loamy soil, medium humidity and neutral pH, low tolerance to compaction, tolerance to de-icing salt	
Comments	Slightly susceptible to urban pollution	

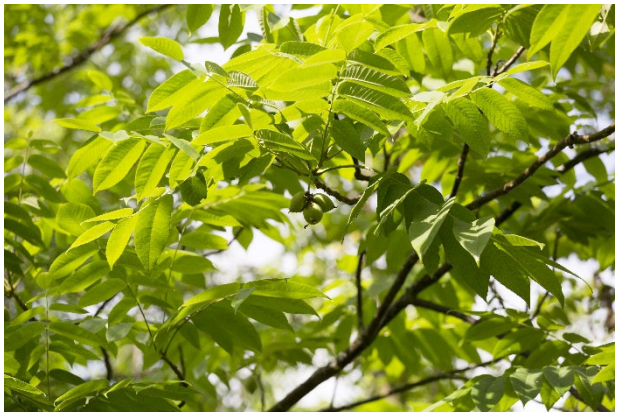
Common name: Bur oak		
Latin name: *Quercus macrocarpa*		
Height	20 m	
Width	20 m	
Exposition	Sun	
Aspect	Globular shape, wide, sparse and rounded crown, spreading branches	
Soil	Sandy soil, medium humidity, medium tolerance to compaction and de-icing salt	
Comments	Tolerance to pollution and long lifespan	
Common name: Northern red oak		
Latin name: *Quercus rubra*		
Height	24 m	
Width	24 m	
Exposition	Sun	
Aspect	Pyramidal shape becomes rounded, spreading, irregular crown, horizontal or semi-erect branches, crown flattened with age and forms a dome	
Soil	Mix of loam and sandy soil, average humidity, neutral to slightly low pH, tolerance to compaction and de-icing salt	
Comments	Tolerates urban conditions	

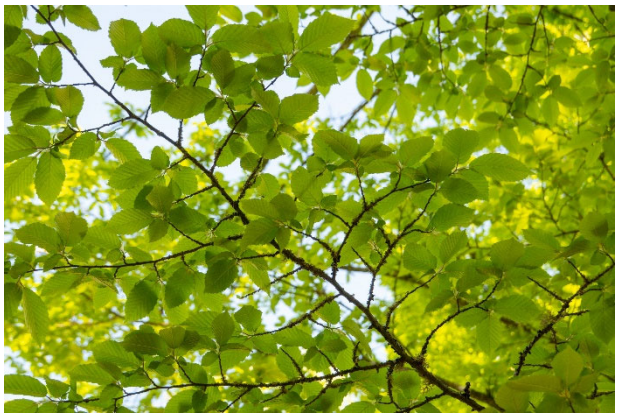
Common name: Silver maple		
Latin name: *Acer saccharinum*		
Height	24 m	
Width	24 m	
Exposition	Sun, partial shade or shade	
Aspect	Rounded and irregular shape, short trunk, branches with poor wind resistance	
Soil	Varied soils, tolerance to compaction and low tolerance to de-icing salt	
Comments	It is prohibited to plant this tree species at less than 7.5 meters from a main building, a lot line, a street's right-of-way and at less than 10 meters from underground infrastructure and conduits for public, article 7.1.9 of the zoning by-law. Tolerates pollution, susceptible to wind and ice.	

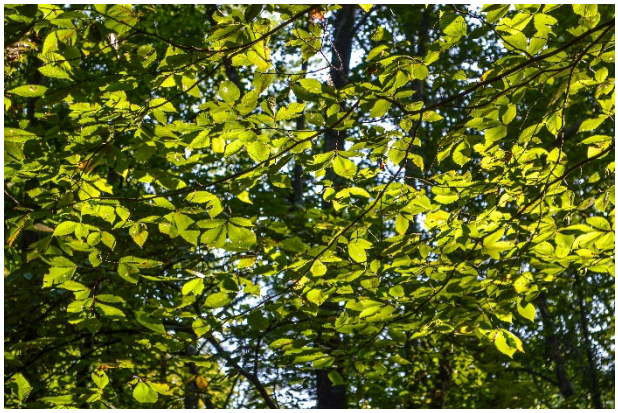
Common name: Sugar maple		
Latin name: *Acer saccharum*		
Height	20 m	
Width	15 m	
Exposition	Sun or partial shade, sheltered from the wind	
Aspect	Ovoid shape, becomes globular, rounded crown, wide and regular	
Soil	Loamy soil, medium humidity and neutral to slightly low pH, low tolerance to compaction and de-icing salt	
Comments	Unsuited to urban conditions	

Common name: Red maple	
Latin name: *Acer rubrum*	
Height	20 m
Width	15 m
Exposition	Sun or partial shade
Aspect	Pyramidal shape, becomes ovoid or rounded, irregular
Soil	Clay soil but adapts to all types of consistent soils, high humidity and low pH, tolerance to compaction, intolerance to de-icing salt
Common name: American beech	
Latin name: *Fagus grandifolia*	
Height	22 m
Width	18 m
Exposition	Sun, partial shade or shade
Aspect	Globular shape, wide and regular, short trunk dividing into several large branches
Soil	Loamy soil, average humidity and low pH, intolerance to compaction and low tolerance to de-icing salt
Comments	Low availability in nursery, resists well to pollution

Common name: Common hackberry	
Latin name: *Celtis occidentalis*	
Height	15 m
Width	8 m
Exposition	Sun or partial shade
Aspect	Rounded shape, more or less wide crown, ascending branches and hanging twigs
Soil	Varied soils, medium compaction tolerance and de-icing salt tolerance
Comments	Supports urban pollution

Common name: Butternut	
Latin name: *Juglans cinerea*	
Height	18 m
Width	12 m
Exposition	Sun
Aspect	Globular shape, broad, sparse and flattened crown, short trunk
Soil	Loamy soil and average humidity, neutral pH, medium tolerance to compaction and low tolerance to de-icing salt
Comments	Toxin secreted by the roots that can inhibit the growth of surrounding plants and grass, species at risk in Quebec

Common name: White elm	
Latin name: *Ulmus americana*	
Height	25 m
Width	20 m
Exposition	Sun
Aspect	Ovoid, wide fan-shaped tree at maturity
Soil	Loamy soil but adapts to varied soils, high to medium humidity and high pH, tolerance to compaction and de-icing salt
Comments	Low availability in nursery, high susceptibility to Dutch disease

Common name: English elm	
Latin name: *Ulmus rubra*	
Height	25 m
Width	20 m
Exposition	Sun
Aspect	Obovoid shape, broad crown, flattened, fast growing
Soil	Loamy soil but adapts to varied soils, high to medium humidity and high pH, tolerance to compaction and de-icing salt
Comments	Low availability in nursery, high susceptibility to Dutch disease

Common name: Eastern hop-hombeam, bois de fer	
Latin name: *Ostrya virginiana*	
Height	12 m
Width	8 m
Exposition	Sun, partial shade or shade
Aspect	Upright shape, crown becomes wider and rounded with age, straight trunk
Soil	Loamy soil, medium moisture and slightly low pH, low tolerance to compaction and medium tolerance to de-icing salt
Comments	Low availability in nursery, resists well to urban conditions and requires little maintenance

Common name: Large-toothed aspen	
Latin name: *Populus grandidentata*	
Height	20 m
Width	12 m
Exposition	Sun
Aspect	Pyramidal shape becomes oval, irregular crown
Soil	Varied soils, high humidity and low pH, medium tolerance to de-icing salt
Comments	Low availability in nursery

Common name: Eastern cottonwood		
Latin name: *Populus deltoïdes*		
Height	28 m	
Width	21 m	
Exposition	Sun	
Aspect	Pyramidal shape slightly flared at the top, broad crown, and short trunk	
Sol	Various soils, high humidity, tolerance to compaction and de-icing salt	
Comments	Low availability in nursery, tolerates urban conditions well, but plant away from buildings, pipes and sidewalks	

Common name: Basswood		
Latin name: *Tilia americana*		
Height	23 m	
Width	17 m	
Exposition	Sun or partial shade	
Aspect	Pyramidal shape, rounding with age, fairly regular, broad crown, spreading branches	
Soil	Loamy soil but adapts to varied soils, average humidity and neutral pH, low tolerance to de-icing salt	
Comments	Does not tolerate well urban conditions	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