



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00215

Betula papyrifera* – *Populus tremuloides* – *Pinus banksiana* / *Acer spicatum* / *Clintonia borealis

Paper Birch – Trembling Aspen – Jack Pine / Mountain Maple / Yellow Clintonia

Bouleau à papier – Peuplier faux-tremble – Pin gris / Érable à épis / Clintonie boréale

Subassociations: 215a *typic*, 215b *Acer rubrum*

CNVC Alliance: CA00015 *Betula papyrifera* – *Populus tremuloides* – *Abies balsamea* / *Acer spicatum*

CNVC Group: CG0007 Ontario-Quebec Boreal Mesic Paper Birch – Balsam Fir – Trembling Aspen Forest

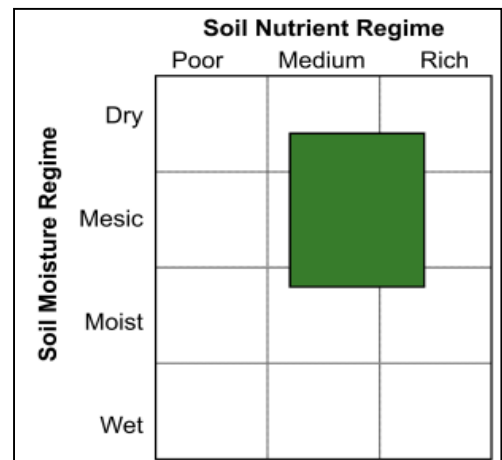
Type Description

Concept: CNVC00215 is a boreal mixedwood forest Association that ranges from Manitoba to Quebec. It has a closed canopy of paper birch (*Betula papyrifera*) and/or trembling aspen (*Populus tremuloides*), with jack pine (*Pinus banksiana*) and/or black spruce (*Picea mariana*). The shrub layer is dense and dominated by the tall shrubs mountain maple (*Acer spicatum*) and/or beaked hazelnut (*Corylus cornuta*), with lower abundance of regenerating balsam fir (*Abies balsamea*), paper birch and black spruce. The low shrubs northern bush-honeysuckle (*Diervilla lonicera*), early lowbush blueberry (*Vaccinium angustifolium*) and velvet-leaved blueberry (*V. myrtilloides*) are also common. The herb layer is well developed and typically includes wild sarsaparilla (*Aralia nudicaulis*), wild lily-of-the-valley (*Maianthemum canadense*), bunchberry (*Cornus canadensis*), yellow clintonia (*Clintonia borealis*), large-leaved aster (*Eurybia macrophylla*), northern starflower (*Lysimachia borealis*), rose twisted-stalk (*Streptopus lanceolatus*) and twinflower (*Linnaea borealis*). Bracken fern (*Pteridium aquilinum*) is sometimes abundant. The forest floor cover is mainly broad-leaf litter so the moss layer is sparse, with only minor cover of red-stemmed feathermoss (*Pleurozium schreberi*). CNVC00215 is an early seral condition that typically establishes after fire or harvesting. It occurs in a region with a continental boreal climate that grades from subhumid in the western portion of its range to humid in the east. It is most frequently found on mesic, nutrient-medium to rich sites. Two subassociations are distinguished, *typic* and *Acer rubrum*.

Vegetation: CNVC00215 is a mixedwood forest Association with a closed canopy consisting of the hardwood species *Betula papyrifera* and/or *Populus tremuloides* and the conifer species *Pinus banksiana* and/or *Picea mariana*. The shrub layer is dense and characterized by an abundance of the tall shrubs *Acer spicatum* and/or *Corylus cornuta*. Regenerating *Abies balsamea*, *B. papyrifera* and *P. mariana* also contribute to the shrub cover, as do the low shrubs *Diervilla lonicera*, *Vaccinium myrtilloides* and *V. angustifolium*. The herb layer is usually well developed and typically includes *Aralia nudicaulis*, *Maianthemum canadense*, *Cornus canadensis*, *Clintonia borealis*, *Eurybia macrophylla*, *Lysimachia borealis*, *Streptopus lanceolatus* and *Linnaea borealis*. The moss layer is poorly developed because of abundant broad-leaf litter; typically *Pleurozium schreberi* is present but limited to areas not covered by leaves, like fallen logs and tree bases. Compared to the *typic*, the *Acer rubrum* subassociation has higher abundance of more temperate species, such as *A. rubrum*, *Viburnum nudum* (see Comments), *Ilex mucronata* and *Pteridium*



Source: Natural Resources Canada - Canadian Forest Service





***Betula papyrifera* – *Populus tremuloides* – *Pinus banksiana* / *Acer spicatum* / *Clintonia borealis* CNVC00215**

Type Description (cont'd)

Environment: CNVC00215 occurs in a continental boreal climate that is subhumid in the western part of its range, becoming increasingly humid farther east, and more temperate farther south. It is primarily found on mesic, nutrient-medium to rich sites. Stands are commonly found on level or gentle to moderate slopes on upper to middle-slope topopositions. Soils are deep or moderately deep, well drained and usually coarse-textured, often coarse loams or sands derived from morainal, or less frequently, glaciofluvial parent materials. Occasionally, stands occur on finer-textured lacustrine silts or clays. Mor humus forms are common, but compared to other boreal forest Associations, moders are relatively frequent. The *typic* subassociation occurs on more subdued topography; it is usually found on level to moderate slopes, and is more frequently on glaciofluvial and lacustrine parent materials. The *Acer rubrum* subassociation is more common on moderate to moderately steep slopes and on warmer aspects, either west or south-facing.

CNVC00215 occurs where the regional fire cycle is intermediate (100-270 years), long (270-500 years) or very long (>500 years). Where the regional fire cycle is longer, stands of CNVC00215 likely occur on sites that burn more frequently than the regional average.

Dynamics: CNVC00215 is an early seral condition that typically establishes after stand-replacing fire or harvesting. The main canopy species are adapted to disturbance. Following any disturbance that does not kill their roots, *Populus tremuloides* and *Betula papyrifera* can reproduce vegetatively, *P. tremuloides* from root suckers and *B. papyrifera* from stump sprouts. These species also produce abundant, light, wind-dispersed seeds that can readily colonize mineral soil seedbeds exposed by disturbance. *Pinus banksiana* and *Picea mariana* have cones that open when heated by fire, releasing large quantities of seeds onto fire-prepared seedbeds.

P. tremuloides, *B. papyrifera* and *P. banksiana* are intolerant of shade so do not replace themselves in a stand without further disturbance. If seed sources are available, shade tolerant conifers (especially *Abies balsamea*) can become established in these stands and may grow into the canopy as the pioneer species decline. Over time, a mid-seral mixedwood Association could develop (e.g., CNVC00235 [*Abies balsamea* – *Betula papyrifera* / *Acer spicatum*] or CNVC00216 [*Picea mariana* – *Betula papyrifera* (*Abies balsamea*) / *Acer spicatum*]).

Acer rubrum is a temperate species that can seed-in or re-sprout following disturbance. It is also shade tolerant so can replace itself within a stand. It often does particularly well after anthropogenic disturbance.

Acer spicatum and *Corylus cornuta* can form dense thickets in canopy openings, sometimes significantly delaying tree regeneration. Their deep roots can survive even high-severity fires and they respond quickly after disturbance by suckering. Being semi-shade tolerant, these tall shrubs persist as the canopy closes, limiting available light for plants beneath them.

Forest tent caterpillar (*Malacosoma disstria*) and *Armillaria* root disease (*Armillaria* spp.) can have significant impacts on *P. tremuloides*. Defoliation by the caterpillar can reduce growth, cause dieback and sometimes lead to mortality. *Armillaria* spp. can weaken or kill individual or small groups of trees. Canopy openings that result from insect or pathogen disturbance can promote forest succession by enhancing the growth of understory trees, such as *P. mariana* and *A. balsamea*.

Range: CNVC00215 occurs in the boreal region of western Quebec and Ontario and likely extends into southeastern Manitoba as far west as Lake Winnipeg. In Quebec, it ranges as far east as the Saguenay River. CNVC00215 occurs sporadically in the northern temperate region, usually on sites that are cooler than normal for that region (e.g., at higher elevations or on north aspects). The *typic* subassociation is recognized in Ontario and Quebec while the *Acer rubrum* subassociation is described from Quebec only and is usually found farther south than the *typic*.

Conservation Status (NatureServe)

Global Conservation Rank: no applicable rank

National Conservation Rank: not yet determined

Subnational Conservation Rank: not yet determined



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Distribution

Countries: Canada

Provinces / Territories / States: Manitoba, Ontario, Quebec

Terrestrial Ecozones and Ecoregions of Canada: Boreal Shield: Abitibi Plains, Lac Seul Upland, Lake Nipigon, Lake of the Woods, Lake Timiskaming Lowland, Rivière Rupert Plateau, Southern Laurentians, Thunder Bay-Quetico

Rowe's Forest Regions and Sections of Canada: Boreal: Central Plateau, Gouin, Laurentide-Onatchiway, Missinaibi-Cabonga, Northern Clay, Superior, Upper English River; Great Lakes-St. Lawrence: Algonquin-Pontiac, Haileybury Clay, Laurentian, Quetico, Timagami

NAAEC CEC Ecoregions of North America (Levels I & II): Northern Forests: Mixed Wood Shield, Softwood Shield

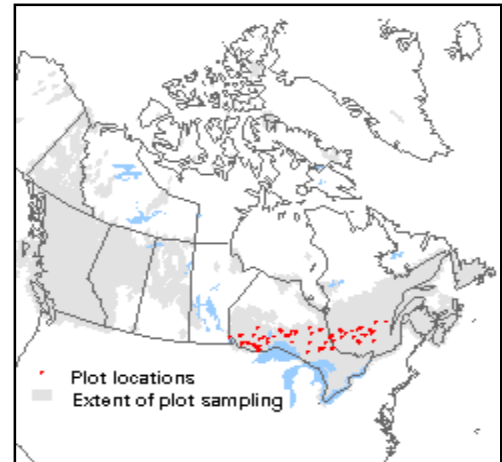
Nature Conservancy of Canada Ecoregions: Boreal Shield, Great Lakes, Superior-Lake of the Woods

Ecozones and Ecoregions of Manitoba: Boreal Shield

Manitoba Protected Areas Initiative Natural Regions: Manitoba Lowlands: Lake of the Woods

Ecological Land Classification of Ontario (ecoregions and ecodistricts): 3E-1, 3E-2, 3E-4, 3E-5, 3E-6, 3W-1, 3W-2, 3W-3, 3W-4, 3W-5, 4E-3, 4E-4, 4S-4, 4S-5, 4S-6, 4W-1

Bioclimatic Domains and Subdomains of Québec: 3 Est, 4 Ouest, 5 Ouest



Corresponding Types and Associations

215a typic	Ontario	BTr4-12	Populus tremuloides - Betula papyrifera - Pinus banksiana (Picea mariana) / Acer spicatum / Clintonia borealis
	Quebec	QC059	Betula papyrifera - Pinus banksiana / Acer spicatum
215b Acer rubrum	Quebec	QC113	Pinus banksiana - Acerrub (Betula papyrifera) / Acer spicatum - Diervilla lonicera



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Vegetation Summary*

Species Name [†]	Association CNVC00215 83 plots		Subassociation 215a <i>typic</i> 71 plots		Subassociation 215b <i>Acer rubrum</i> 12 plots	
	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]
	Overstory Trees					
<i>Pinus banksiana</i>	23	88	19	86	39	100
<i>Betula papyrifera</i>	23	77	24	73	16	100
<i>Populus tremuloides</i>	25	70	26	72	16	58
<i>Picea mariana</i>	11	66	10	63	12	83
<i>Abies balsamea</i>	6	35	6	34	3	42
<i>Acer rubrum</i>	13	22	5	8	17	100
<i>Picea glauca</i>	6	20	6	15	5	50
<i>Prunus pensylvanica</i>	4	13	5	10	3	33
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(30 48 65 86 99)		(26 44 62 83 99)		(66 79 86 99 99)	
Understory Woody Shrubs and Regenerating Trees						
<i>Diervilla lonicera</i>	10	92	9	90	14	100
<i>Acer spicatum</i>	27	83	29	83	16	83
<i>Corylus cornuta</i>	19	82	18	83	19	75
<i>Abies balsamea</i>	7	78	7	80	4	67
<i>Betula papyrifera</i>	6	72	6	68	3	100
<i>Picea mariana</i>	5	64	5	61	6	83
<i>Vaccinium angustifolium</i>	2	60	2	58	2	75
<i>Vaccinium myrtilloides</i>	4	59	4	61	5	50
<i>Populus tremuloides</i>	2	51	2	55	2	25
<i>Lonicera canadensis</i>	2	46	2	45	3	50
<i>Amelanchier</i> sp.	3	35	3	27	3	83
<i>Acer rubrum</i>	6	34	5	23	8	100
<i>Picea glauca</i>	3	33	4	30	2	50
<i>Sorbus decora</i>	2	33	2	37	3	8
<i>Alnus viridis</i>	7	31	7	32	8	25
<i>Sorbus americana</i>	4	27	4	23	3	50
<i>Viburnum nudum</i>	6	25	5	14	6	92
<i>Rosa acicularis</i>	2	25	2	30	-	-
<i>Salix</i> sp.	3	22	3	15	3	58
<i>Prunus pensylvanica</i>	3	19	3	13	2	58
<i>Kalmia angustifolia</i>	6	18	5	14	8	42
<i>Ilex mucronata</i>	3	14	2	6	4	67
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(36 49 68 88 99)		(36 49 69 91 99)		(34 49 62 83 97)	



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00215		Subassociation 215a <i>typic</i>		Subassociation 215b <i>Acer rubrum</i>	
	Cover [‡]	Presence [^]	Cover [‡]	Presence [^]	Cover [‡]	Presence [^]
Understory Herbs and Dwarf Shrubs						
<i>Aralia nudicaulis</i>	6	98	5	97	13	100
<i>Maianthemum canadense</i>	4	96	4	96	7	100
<i>Cornus canadensis</i>	5	94	4	93	5	100
<i>Clintonia borealis</i>	4	93	4	93	5	92
<i>Eurybia macrophylla</i>	10	81	10	80	6	83
<i>Lysimachia borealis</i>	2	78	1	76	3	92
<i>Streptopus lanceolatus</i>	2	72	2	77	2	42
<i>Linnaea borealis</i>	2	71	2	73	3	58
<i>Lycopodium obscurum</i>	2	59	2	59	2	58
<i>Coptis trifolia</i>	2	54	2	54	2	58
<i>Pteridium aquilinum</i>	11	51	8	42	19	100
<i>Rubus pubescens</i>	2	48	2	56	-	-
<i>Viola renifolia</i>	1	43	1	51	-	-
<i>Lycopodium clavatum</i>	2	37	2	41	2	17
<i>Goodyera repens</i>	1	31	1	35	2	8
<i>Gaultheria hispidula</i>	2	30	1	28	3	42
<i>Lycopodium annotinum</i>	2	27	2	28	2	17
<i>Anemone quinquefolia</i>	1	25	1	30	-	-
<i>Galium triflorum</i>	1	22	1	25	-	-
<i>Viola</i> sp.	2	14	2	13	2	25
<i>Dryopteris spinulosa</i> complex	4	10	7	4	2	42
<i>Oclemena acuminata</i>	2	8	-	-	2	58
<i>Cypripedium acaule</i>	2	7	2	4	3	25
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(17 23 40 50 70)		(17 22 39 50 70)		(33 33 48 70 70)	
Bryophytes and Lichens						
<i>Pleurozium schreberi</i>	8	94	8	93	9	100
<i>Ptilium crista-castrensis</i>	3	52	3	52	2	50
<i>Dicranum polysetum</i>	1	49	1	58	-	-
<i>Dicranum</i> sp.	3	31	3	20	3	100
<i>Hylocomium splendens</i>	2	28	2	32	-	-
<i>Hypnum pallescens</i>	1	28	1	32	-	-
<i>Cladonia</i> sp.	2	25	2	18	2	67
<i>Dicranum fuscescens</i>	1	25	1	30	-	-
<i>Polytrichum</i> sp.	2	23	2	15	2	67
<i>Cladina rangiferina</i>	2	22	2	15	2	58
<i>Plagiomnium cuspidatum</i>	2	20	2	24	-	-
<i>Rhytidiadelphus triquetrus</i>	2	19	2	21	2	8
<i>Polytrichum juniperinum</i>	1	19	1	23	-	-
<i>Cladina mitis</i>	2	12	2	8	2	33
<i>Sphagnum</i> sp.	2	5	2	1	2	25
Bryo-Lichen Stratum Cover	(3 3 14 17 32)		(3 3 14 18 27)		(1 3 14 16 31)	

* species present in > 20% of sample plots are listed

[†] see **Botanical Nomenclature** link at <http://cnvc-cnvc.ca> for botanical sources, synonyms and common names

[‡] average percent cover of a species within the plots in which it occurs (i.e., characteristic cover)

[^] percent frequency occurrence for a species within the total plots

[‡] P_x = Xth percentile (e.g., P₁₀ = 10th percentile)



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Site / Soil Characteristics

	Association CNVC00215 83 plots	Subassociation 215a <i>typic</i> 71 plots	Subassociation 215b <i>Acer rubrum</i> 12 plots
Elevation Range (min–mean–max meters)	214–407–524	214–411–524	245–389–520
Slope Gradient (% frequency)	steep (2) moderately steep (14) moderate (25) gentle (27) level (29) missing data (2)	steep (3) moderately steep (11) moderate (21) gentle (28) level (34) missing data (3)	steep (0) moderately steep (33) moderate (50) gentle (17) level (0) missing data (0)
Aspect (% frequency)	north (18) east (22) south (16) west (28) level (17)	north (21) east (23) south (13) west (25) level (18)	north (0) east (17) south (33) west (42) level (8)
Meso Toposition (% frequency)	crest / upper (41) mid (34) lower / toe (8) depression (2) level (14)	crest / upper (39) mid (32) lower / toe (8) depression (3) level (17)	crest / upper (50) mid (42) lower / toe (8) depression (0) level (0)
Moisture Regime (% frequency)	dry (25) mesic (65) moist (10)	dry (28) mesic (61) moist (11)	dry (8) mesic (92) moist (0)
Nutrient Regime (% frequency)	missing data (100)	missing data (100)	missing data (100)



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Site / Soil Characteristics (cont'd)

	Association CNVC00215	Subassociation 215a <i>typic</i>	Subassociation 215b <i>Acer rubrum</i>
Soil Parent Material (% frequency)	eolian (1) moraine / till (60) fluvial (2) glaciofluvial (23) lacustrine (13)	eolian (1) moraine / till (55) fluvial (3) glaciofluvial (25) lacustrine (15)	eolian (0) moraine / till (92) fluvial (0) glaciofluvial (8) lacustrine (0)
Soil Rooting Zone Substrate (% frequency)	sandy (19) coarse loamy (20) fine loamy (1) silty (12) clayey (8) organic (1) missing data (37)	sandy (23) coarse loamy (21) fine loamy (1) silty (14) clayey (10) organic (0) missing data (31)	sandy (0) coarse loamy (17) fine loamy (0) silty (0) clayey (0) organic (8) missing data (75)
Root Restricting Depth (% frequency)	0 – 20 cm (2) 21 – 99 cm (36) ≥ 100 cm (42) missing data (19)	0 – 20 cm (1) 21 – 99 cm (32) ≥ 100 cm (49) missing data (17)	0 – 20 cm (8) 21 – 99 cm (58) ≥ 100 cm (0) missing data (33)
Humus Form (% frequency)	mor (72) moder (25) mull (1) missing data (1)	mor (70) moder (27) mull (1) missing data (1)	mor (83) moder (17) mull (0) missing data (0)



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Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity:

Confidence:

Strength:

Related Concepts

Similar CNVC Associations:

CNVC00213 [*Populus tremuloides* – *Betula papyrifera* – *Picea mariana* – *Pinus banksiana* / *Diervilla lonicera* / *Pleurozium schreberi*] occurs on slightly poorer sites in the same range and has less *Acer spicatum* and *Corylus cornuta* in the shrub layer.

CNVC00216 [*Picea mariana* – *Betula papyrifera* (*Abies balsamea*) / *Acer spicatum*] occurs on similar sites in Quebec but has more *Abies balsamea* and no *Pinus banksiana* (see Dynamics).

CNVC00239 [*Betula papyrifera* (*Populus tremuloides*) / *Acer spicatum* / *Clintonia borealis*] is a similar hardwood Association that occurs on comparable sites in the same range.

CNVC00272 [*Populus tremuloides* – *Picea mariana* / *Alnus incana*] occurs on moister, richer sites in the same range and has abundant *Alnus incana* in the shrub layer.

CNVC00347 [*Populus tremuloides* – *Picea mariana* – *Pinus banksiana* / *Acer spicatum* (*Rosa acicularis*)] occurs in northwestern Ontario and southeastern Manitoba on comparable sites. It has more *Populus tremuloides* and less *Betula papyrifera*, *Vaccinium angustifolium* and *Eurybia macrophylla*.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

Comments

Viburnum nudum here refers to var. *cassinoides* (wild raisin).

Source Information

Number of source plots for CNVC00215: 83

Number of source plots for 215a typic: 71

Number of source plots for 215b *Acer rubrum*: 12

Information Sources:

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.

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.

Concept Authors: K. Baldwin, K. Chapman, M. Major, C. Morneau, P. Uhlig, M. Wester

Description Authors: K. Chapman, K. Baldwin and J.-P. Saucier

Date of Concept: March, 2013

Date of Description: February, 2016



***Betula papyrifera* – *Populus tremuloides* – *Pinus banksiana* / *Acer spicatum* / *Clintonia borealis* CNVC00215**

Classification References:

Gosselin, J.; Grondin, P.; Saucier, J.-P. 1998. Rapport de classification écologique du sous-domaine bioclimatique de la sapinière à bouleau jaune de l'ouest. Min. des Res. nat du Qué., Dir. de la gestion des stocks forestiers, QC.

Grondin, P.; Blouin, J.; Racine, P. 1998. Rapport de classification écologique du sous-domaine bioclimatique de la sapinière à bouleau blanc de l'ouest. Min. des Res. nat. du Qué., Dir. des inv. for., QC.

Uhlig, P.W.C., Chapman, K., Baldwin, K., Wester, M., Yanni, S. 2016. Draft boreal treed vegetation type factsheets. Ecol. Land Class. Prog., Ont. Min. Nat. Resour. & For., Sci. & Info Branch, Sault Ste. Marie, ON.

Characterization References:

Bell, F.W. 1991. Critical silvics of conifer crop species and selected competitive vegetation in northwestern Ontario. For. Can., Ontario Region, Sault Ste. Marie, Ont. and NW Ont. Tech. Dev. Unit, Min. Nat. Resour., Thunder Bay, ON. COFRDA Rep. 3310.

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Bergeron, Y.; Chen, H.Y.H.; Kenkel, N.C.; Leduc, A.; Macdonald, S.E. 2014. Boreal mixedwood stand dynamics: ecological processes underlying multiple pathways. For. Chron. 90(2):202-213.

Boulanger, Y.; Gauthier, S.; Burton, P.J. 2014. A refinement of models projecting future Canadian fire regimes using homogeneous fire regime zones. Can. J. For. Res. 44(4):365-376.

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***Betula papyrifera* – *Populus tremuloides* – *Pinus banksiana* / *Acer spicatum* / *Clintonia borealis* CNVC00215**

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