



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

<http://cnvc-cnvc.ca>

Wetland / Tourbière boisée

Association CNVC00293

Picea mariana / *Sanguisorba canadensis* / *Rhytidiadelphus triquetrus*

Black Spruce / Canada Burnet / Electrified Cat's-tail Moss

Épinette noire / Sanguisorbe du Canada / Ébouriffe triangulaire

Subassociations: 293a *typic*, 293b *Taxus canadensis*

CNVC Alliance: CA00042 *Picea mariana* / *Carex* spp. / *Rhytidiadelphus triquetrus*

CNVC Group: CG0018 Atlantic Boreal Rich Treed Wetland

Type Description

Concept: CNVC00293 is a boreal, wetland, coniferous, forest Association that occurs on the island of Newfoundland. It has an open tree layer dominated by black spruce (*Picea mariana*), often with a minor component of balsam fir (*Abies balsamea*). The moderately developed shrub layer is dominated by black spruce of varying ages intermixed with sporadic occurrences of various shrub species. The herb and moss layers are diverse and luxuriant; this is among the most species-rich Associations from Newfoundland. The herb layer is dense and includes many nutrient-demanding species. Canada burnet (*Sanguisorba canadensis*) and sedges, especially sheathed sedge (*Carex vaginata*) and bristly-stalked sedge (*C. leptalea*) dominate, but many other species commonly occur, including bunchberry (*Cornus canadensis*), dwarf raspberry (*Rubus pubescens*), twinflower (*Linnaea borealis*) and naked mitrewort (*Mitella nuda*) and creeping snowberry (*Gaultheria hispidula*). Almost equal cover of stairstep moss (*Hylocomium splendens*), electrified cat's-tail moss (*Rhytidiadelphus triquetrus*), red-stemmed feathermoss (*Pleurozium schreberi*) and hook-leaved fern moss (*Thuidium recognitum*) characterize the well-developed moss layer. CNVC00293 occurs on wet, nutrient-rich sites in a region with a humid, maritime climate. Substrates are usually deep (>40cm) organic soils formed from slowly decomposing sedges. Fire is uncommon; instead wind is the primary agent of disturbance. This is a self-perpetuating Association that can readily regenerate by black spruce layering if disturbed. Two subassociations are distinguished, *typic* and *Taxus canadensis*.

Vegetation: CNVC00293 is a coniferous forest Association with an open tree layer dominated by *Picea mariana*, usually with a minor component of *Abies balsamea*. *P. mariana* layers dominate the moderately developed shrub layer. Shrub species usually occur only sporadically. A dense, species rich herb layer, dominated by *Sanguisorba canadensis* and *Carex* spp. (particularly *Carex. vaginata* and *C. leptalea*) helps to characterize this Association. Other common species in the herb layer include *Cornus canadensis*, *Rubus pubescens*, *Linnaea borealis* and *Mitella nuda*. The moss layer is well developed and forms medium to large patches. *Thuidium recognitum* and *Rhytidiadelphus triquetrus* are prominent fen mosses that occur in addition to *Hylocomium splendens* and *Pleurozium schreberi*. This Association has among the highest diversity of plant species in Newfoundland, frequently exceeding 70 species per sample plot.

CNVC00293 has two subassociations, *typic* and *Taxus canadensis*. The *typic* subassociation usually includes *Larix laricina* in the tree layer, greater frequency of *Rhamnus alnifolia* and *Rhododendron groenlandicum* in the shrub layer and greater cover of species characteristic of wet sites in the herb layer (e.g., *Geum rivale*, *Cirsium muticum*, *Platanthera dilatata*, *Conioselinum chinense*, *Maianthemum trifolium*, *Thalictrum pubescens*, *Solidago uliginosa*, *Caltha palustris*, *Galium palustre*, and *Petasites frigidus*) and in the moss layer (e.g., *Rhizomnium punctatum*, *Tomentypnum nitens*, *Campyllum stellatum*, and *Aulacomnium palustre*). The *Taxus canadensis* subassociation has greater cover of *A. balsamea* in the overstory and understory, and a better-developed shrub layer that includes *T. canadensis*. In the herb layer, it has greater constancy and cover of *Epigaea repens*, *Clintonia borealis*, *Solidago macrophylla*, *Coptis trifolia*, *Equisetum sylvaticum* and ferns such as *Gymnocarpium dryopteris* and *Osmundastrum cinnamomeum*.



Source: B. Meades

		Soil Nutrient Regime		
		Poor	Medium	Rich
Soil Moisture Regime	Dry			
	Mesic			
	Moist			
	Wet			



***Picea mariana* / *Sanguisorba canadensis* / *Rhytidiadelphus triquetrus* CNVC00293**

Type Description (cont'd)

Environment: CNVC00293 occurs on wet, nutrient-rich organic soils in the humid maritime boreal climate of Newfoundland. It usually occurs in the transition between upland forests and open peatlands where there is nutrient-rich seepage. The *typic* subassociation occurs on deep (70-100 cm) organic materials over a gleyed subsoil. It has telluric seepage within 15-20 cm of the surface, and the water table is near the surface year round. These *typic* sites are eutrophic (i.e., nutrient-rich). The *Taxus canadensis* subassociation occurs on relatively shallow (25-50 cm) mesic sedge peats over gleyed mineral soils with prominent rust mottling. They have a seasonally perched water table, but the surface may dry out during summer. These *Taxus canadensis* sites are mesotrophic (i.e., nutrient-medium). This Association is most commonly encountered on near basic organic soils in western and northern Newfoundland.

Dynamics: CNVC00293 is a stable Association that is rarely disturbed by fire because of the wet site conditions and humid climate. These stands are rarely disturbed by logging because of their low commercial productivity. Natural disturbances are primarily localized windthrow events because strong winds are common and the high water table of these sites results in shallow rooting, making trees more vulnerable to winds. *Picea mariana* can readily regenerate on these sites through layering so CNVC00293 is a self-perpetuating, uneven-aged condition.

Range: CNVC00293 occurs in western and northern Newfoundland. The *typic* subassociation occurs throughout the range. The *Taxus canadensis* subassociation is known only from southwestern Newfoundland.

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: Newfoundland and Labrador

Terrestrial Ecozones and Ecoregions of Canada: Boreal Shield: Northern Peninsula, Southwestern Newfoundland

Rowe's Forest Regions and Sections of Canada: Boreal: Corner Brook, Northern Peninsula

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

Nature Conservancy of Canada Ecoregions: Boreal Shield

Ecoregions of Newfoundland: Northern Peninsula, Southwestern Newfoundland



Corresponding Types and Associations

293a typic	Newfoundland and Labrador	N CCP	Northern: <i>Carex vaginata</i> - <i>Equisetum scirpoides</i> - black spruce forest
		N SCP	Northern: <i>Sanguisorba</i> - <i>Paludella</i> - black spruce forest
		W CP	Western: <i>Carex</i> - black spruce forest
293b Taxus canadensis	Newfoundland and Labrador	W OP	Western: <i>Osmunda</i> - black spruce forest
		W Oryzopsis_bS	Western: <i>Oryzopsis</i> - black spruce forest



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Vegetation Summary*

Species Name [†]	Association CNVC00293		Subassociation 293a <i>typic</i>		Subassociation 293b <i>Taxus canadensis</i>	
	18 plots		9 plots		9 plots	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
Overstory Trees						
<i>Picea mariana</i>	24	100	23	100	26	100
<i>Abies balsamea</i>	6	72	1	56	9	89
<i>Larix laricina</i>	7	44	7	89	-	-
<i>Betula papyrifera</i>	1	17	-	-	1	33
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(14 22 32 42 42)		(15 19 29 39 43)		(19 31 34 42 42)	
Understory Woody Shrubs and Regenerating Trees						
<i>Picea mariana</i>	18	83	21	67	16	100
<i>Abies balsamea</i>	5	61	1	33	6	89
<i>Rhododendron groenlandicum</i>	2	61	2	78	2	44
<i>Amelanchier bartramiana</i>	2	56	1	22	2	89
<i>Taxus canadensis</i>	6	50	-	-	6	100
<i>Rhamnus alnifolia</i>	2	50	2	89	1	11
<i>Vaccinium angustifolium</i>	2	39	2	33	2	44
<i>Viburnum edule</i>	1	39	1	22	1	56
<i>Cornus stolonifera</i>	1	33	1	11	1	56
<i>Acer spicatum</i>	3	28	1	11	4	44
<i>Alnus incana</i>	17	17	3	11	24	22
<i>Ilex mucronata</i>	3	17	-	-	3	33
<i>Ribes lacustre</i>	2	17	2	22	2	11
<i>Vaccinium ovalifolium</i>	2	17	-	-	2	33
<i>Kalmia polifolia</i>	1	17	1	33	-	-
<i>Viburnum nudum</i>	1	17	-	-	1	33
<i>Lonicera villosa</i>	1	17	-	-	1	33
<i>Rhododendron canadense</i>	10	11	-	-	10	22
<i>Larix laricina</i>	3	11	3	22	-	-
<i>Dasiphora fruticosa</i>	2	11	2	22	-	-
<i>Kalmia angustifolia</i>	1	11	1	22	-	-
<i>Salix candida</i>	1	11	1	22	-	-
<i>Salix discolor</i>	1	11	1	22	-	-
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(6 20 34 46 60)		(5 7 22 29 35)		(27 31 46 54 73)	
Understory Herbs and Dwarf Shrubs						
<i>Sanguisorba canadensis</i>	25	83	29	100	20	67
<i>Carex vaginata</i>	17	83	16	89	18	78
<i>Cornus canadensis</i>	8	83	7	67	8	100
<i>Rubus pubescens</i>	7	83	6	89	8	78
<i>Linnaea borealis</i>	10	78	12	56	9	100



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00293		Subassociation 293a <i>typic</i>		Subassociation 293b <i>Taxus canadensis</i>	
	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]
<i>Mitella nuda</i>	6	72	8	78	4	67
<i>Geum rivale</i>	3	72	4	100	2	44
<i>Cirsium muticum</i>	2	67	2	100	1	33
<i>Carex leptalea</i>	11	61	7	89	20	33
<i>Clintonia borealis</i>	5	61	2	44	6	78
<i>Thalictrum pubescens</i>	5	61	6	78	2	44
<i>Gaultheria hispidula</i>	4	61	3	56	5	67
<i>Platanthera dilatata</i>	2	61	2	100	2	22
<i>Maianthemum trifolium</i>	8	56	10	78	4	33
<i>Maianthemum canadense</i>	5	56	5	56	6	56
<i>Coptis trifolia</i>	3	56	1	44	4	67
<i>Symphyotrichum puniceum</i>	2	56	3	56	2	56
<i>Epigaea repens</i>	9	50	2	22	12	78
<i>Equisetum sylvaticum</i>	4	50	2	33	5	67
<i>Solidago uliginosa</i>	3	50	4	78	2	22
<i>Conioselinum chinense</i>	3	50	3	89	1	11
<i>Fragaria virginiana</i>	2	50	2	56	2	44
<i>Solidago macrophylla</i>	1	44	1	11	1	78
<i>Galium triflorum</i>	1	44	1	22	1	67
<i>Carex gynocrates</i>	10	39	8	67	19	11
<i>Viola blanda</i>	3	39	2	33	3	44
<i>Galium palustre</i>	2	39	2	67	3	11
<i>Carex echinata</i>	20	33	23	56	1	11
<i>Carex flava</i>	9	33	10	56	3	11
<i>Gymnocarpium dryopteris</i>	4	33	2	11	5	56
<i>Caltha palustris</i>	3	33	3	67	-	-
<i>Equisetum arvense</i>	3	33	4	56	1	11
<i>Petasites frigidus</i>	2	33	2	67	-	-
<i>Heracleum maximum</i>	1	33	2	22	1	44
<i>Streptopus amplexifolius</i>	1	33	2	22	1	44
<i>Streptopus lanceolatus</i>	1	33	1	22	2	44
<i>Dryopteris carthusiana</i>	1	33	1	11	1	56
<i>Osmundastrum cinnamomeum</i>	10	28	1	11	12	44
<i>Equisetum scirpoides</i>	5	28	5	56	-	-
<i>Viola cucullata</i>	4	28	4	44	4	11
<i>Selaginella selaginoides</i>	4	28	4	33	3	22
<i>Eriophorum viridicarinaratum</i>	3	28	4	44	1	11
<i>Lycopodium annotinum</i>	3	28	-	-	3	56
<i>Carex buxbaumii</i>	2	28	2	56	-	-
<i>Angelica atropurpurea</i>	2	28	2	56	-	-
<i>Aralia nudicaulis</i>	2	28	2	22	2	33
<i>Carex trisperma</i>	2	28	2	11	2	44
<i>Neottia convallarioides</i>	2	28	2	33	1	22
<i>Chamerion angustifolium</i>	1	28	2	22	1	33
<i>Packera aurea</i>	1	28	1	44	1	11
<i>Neottia cordata</i>	1	28	1	22	1	33
<i>Trichophorum cespitosum</i>	17	22	1	33	63	11
<i>Oryzopsis asperifolia</i>	5	22	-	-	5	44



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00293		Subassociation 293a <i>typic</i>		Subassociation 293b <i>Taxus canadensis</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Carex capillaris</i>	4	22	4	33	3	11
<i>Valeriana dioica</i>	4	22	4	44	-	-
<i>Prunella vulgaris</i>	3	22	3	22	2	22
<i>Nabalus trifoliolatus</i>	1	22	1	22	2	22
<i>Avenella flexuosa</i>	1	22	-	-	1	44
<i>Carex leptoneura</i>	9	17	-	-	9	33
<i>Carex aquatilis</i>	7	17	7	33	-	-
<i>Calamagrostis canadensis</i>	4	17	1	11	5	22
<i>Equisetum pratense</i>	3	17	3	22	3	11
<i>Doellingeria umbellata</i>	2	17	2	33	-	-
<i>Glyceria striata</i>	2	17	2	33	-	-
<i>Bromus ciliatus</i>	2	17	2	22	1	11
<i>Carex disperma</i>	2	17	3	11	1	22
<i>Vaccinium oxycoccus</i>	2	17	2	33	-	-
<i>Drosera rotundifolia</i>	1	17	2	22	1	11
<i>Huperzia lucidula</i>	1	17	-	-	1	33
<i>Lysimachia borealis</i>	1	17	1	11	2	22
<i>Phegopteris connectilis</i>	3	11	-	-	3	22
<i>Carex arcta</i>	2	11	-	-	2	22
<i>Osmunda claytoniana</i>	2	11	-	-	2	22
<i>Primula mistassinica</i>	2	11	2	22	-	-
<i>Sanicula marilandica</i>	2	11	2	22	-	-
<i>Triglochin palustris</i>	2	11	2	22	-	-
<i>Vaccinium vitis-idaea</i>	2	11	2	22	-	-
<i>Cypripedium reginae</i>	1	11	1	22	-	-
<i>Eriophorum brachyantherum</i>	1	11	1	22	-	-
<i>Geocaulon lividum</i>	1	11	1	22	-	-
<i>Pyrola minor</i>	1	11	-	-	1	22
<i>Rhinanthus minor</i>	1	11	1	22	-	-
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(82 100 95 100 100)		(100 100 100 100 100)		(67 86 89 100 100)	
Bryophytes and Lichens						
<i>Hylocomium splendens</i>	15	78	14	67	15	89
<i>Rhytidiadelphus triquetrus</i>	10	78	8	89	12	67
<i>Pleurozium schreberi</i>	14	72	8	56	17	89
<i>Thuidium recognitum</i>	10	67	6	78	15	56
<i>Rhizomnium punctatum</i>	7	50	7	78	5	22
<i>Ptilium crista-castrensis</i>	6	44	3	33	8	56
<i>Tomentypnum nitens</i>	23	33	23	67	-	-
<i>Trichocolea tomentella</i>	4	33	2	33	5	33
<i>Dicranum undulatum</i>	3	33	2	44	4	22
<i>Plagiomnium sp.</i>	16	28	20	44	1	11
<i>Sanionia uncinata</i>	16	28	20	33	10	22
<i>Ptychostomum pseudotriquetrum</i>	14	28	18	44	1	11
<i>Campylopus stellatum</i>	12	28	12	56	-	-
<i>Aulacomnium palustre</i>	5	28	5	56	-	-
<i>Paludella squarrosa</i>	15	22	15	44	-	-
<i>Sphagnum capillifolium</i>	8	22	-	-	8	44



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00293		Subassociation 293a <i>typic</i>		Subassociation 293b <i>Taxus canadensis</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Dicranum scoparium</i>	7	22	-	-	7	44
<i>Hylocomiastrum umbratum</i>	3	22	1	11	3	33
<i>Dicranum majus</i>	2	22	-	-	2	44
<i>Sphagnum warnstorffii</i>	15	17	38	11	4	22
<i>Rhytidiadelphus loreus</i>	9	17	-	-	9	33
<i>Bazzania trilobata</i>	8	17	-	-	8	33
<i>Philonotis fontana</i>	7	17	7	33	-	-
<i>Cladina rangiferina</i>	6	17	9	22	1	11
<i>Ptilidium ciliare</i>	5	17	7	22	1	11
<i>Rhytidiadelphus squarrosus</i>	5	17	9	11	3	22
<i>Plagiochila asplenioides</i>	3	17	3	22	4	11
<i>Conocephalum salebrosum</i>	2	17	2	33	-	-
<i>Pellia sp.</i>	1	17	2	11	1	22
<i>Calliergon cordifolium</i>	6	11	6	22	-	-
<i>Marchantia polymorpha</i>	6	11	6	22	-	-
<i>Drepanocladus sp.</i>	3	11	3	22	-	-
Bryo-Lichen Stratum Cover						
(P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(38 57 79 100 100)		(47 82 85 100 100)		(35 56 73 97 100)	

* 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 CNVC00293 18 plots	Subassociation 293a typic 9 plots	Subassociation 293b <i>Taxus canadensis</i> 9 plots
Elevation Range (min–mean–max meters)	31–211–518	31–114–152	229–308–518
Slope Gradient (% frequency)	gentle (50) level (44) missing data (6)	gentle (56) level (44) missing data (0)	gentle (44) level (44) missing data (11)
Aspect (% frequency)	north (17) east (33) south (11) west (11) level (22) missing data (6)	north (0) east (56) south (0) west (0) level (44) missing data (0)	north (33) east (11) south (22) west (22) level (0) missing data (11)
Meso Toposition (% frequency)	missing data (100)	missing data (100)	missing data (100)
Moisture Regime (% frequency)	moist (11) wet (78) missing data (11)	moist (0) wet (78) missing data (22)	moist (22) wet (78) missing data (0)
Nutrient Regime (% frequency)	missing data (100)	missing data (100)	missing data (100)
Soil Parent Material (% frequency)	moraine / till (78) missing data (22)	moraine / till (56) missing data (44)	moraine / till (100) missing data (0)
Soil Rooting Zone Substrate (% frequency)	coarse loamy (17) missing data (83)	coarse loamy (11) missing data (89)	coarse loamy (22) missing data (78)
Root Restricting Depth (% frequency)	missing data (100)	missing data (100)	missing data (100)
Humus Form (% frequency)	mor (6) mull (39) missing data (56)	mor (0) mull (33) missing data (67)	mor(11) mull (44) missing data (44)



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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:

CNVC00303 [*Picea mariana* / *Carex* spp. / *Rhytidiadelphus triquetrus*] is a similarly wet, nutrient-rich Association that occurs in Quebec. It typically has greater cover of *Larix laricina* in the tree layer and sometimes *Comarum palustre* in the herb layer. It lacks *Taxus canadensis*, *Epigaea repens*, *Geum rivale*, *Neottia cordata*, *Sanguisorba canadensis*, *Maianthemum trifolium* and *Platanthera dilatata*.

CNVC00312 [*Picea mariana* – *Abies balsamea* / *Osmundastrum cinnamomeum* – *Carex trisperma* / *Sphagnum* spp.] usually has a closed canopy and occurs on nutrient-poor sites, often bog borders. It lacks the sedge and herb species characteristic of wet eutrophic and mesotrophic sites and has abundant *Sphagnum* mosses.

CNVC00353 [*Picea mariana* / *Alnus incana* / *Carex vaginata* / *Rhytidiadelphus triquetrus*] is a similarly wet, nutrient-rich Association from Newfoundland, in which *Alnus incana* dominates the shrub layer. It has more *Kalmia angustifolia*, *Rhamnus alnifolia* and *Carex magellanica* than CNVC00293 and lacks *Taxus canadensis*, *Viburnum edule*, *Amelanchier bartramiana* and the fen mosses, *Aulacomnium palustre*, *Thuidium recognitum* and *Tomentypnum nitens*.

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications: CNVC00293 includes the concept of Sc #18 [*Carex* – Black spruce] and elements of SO #19 [*Osmunda* – Black spruce] from Meades & Moores 1994.

Comments

CNVC00293 is consistent with the concept of a treed fen in the Canadian Wetland Classification System.

Source Information

Number of source plots for CNVC00293: 18

Number of source plots for 293a *typic*: 9

Number of source plots for 293b *Taxus canadensis*: 9

Information Sources:

Natural Resources Canada, Canadian Forest Service, Atlantic Region. 2006. Forest vegetation plot descriptions from the following publications; Damman, A.W.H. (1963, 1964, 1967); Meades, W.J. (1976, 1986). Nat. Resour. Can., Corner Brook, NL.

Concept Authors: K. Baldwin, K. Chapman, B. Meades

Description Authors: B. Meades, K. Chapman and K. Baldwin

Date of Concept: August, 2011

Date of Description: March, 2019



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

<http://cnvc-cnvc.ca>

***Picea mariana* / *Sanguisorba canadensis* / *Rhytidiadelphus triquetrus* CNVC00293**

Classification References:

Damman, A.W.H. 1963. A reconnaissance survey of the ecological conditions in the forests of the Roddickton Area, Newfoundland. For. Res. Branch, Can. Dept. For., NL. Mimeo 63-N-1.

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Characterization References:

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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.

For more information about the contents of this factsheet and definitions of attribute names and data classes, see the **Understanding the Factsheet** link at <http://cnvc-cnvc.ca>.

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