

Critical Habitat Identification: Northwest Territories South (Northwest Territories)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

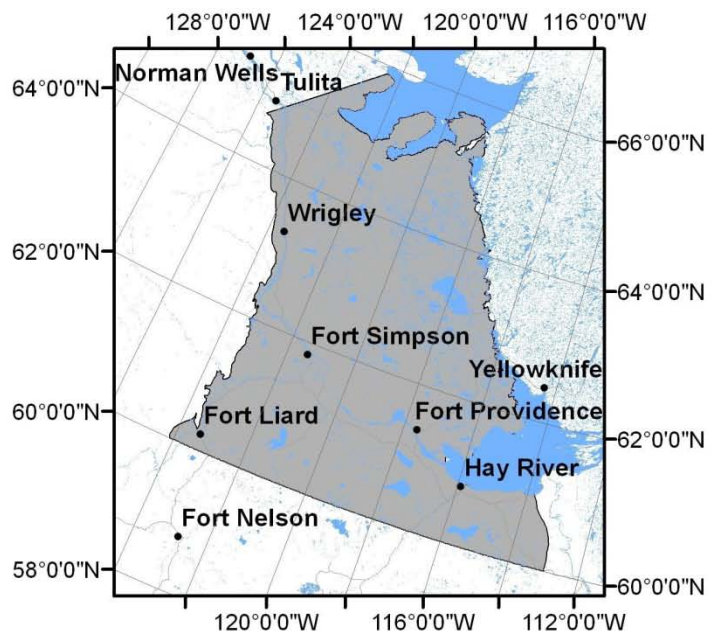


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	24,398,791 ha
	Population size	Unknown
	Population trend	unknown
	Total Habitat Disturbance	9,271,541 ha
Range Assessment	Assessment of the likelihood of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining / Self-Sustaining
Determination of Amount of Habitat	A) Range Size	24,398,791 ha (100%)
	B) Total Habitat Disturbance ¹	9,271,541 ha (38%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	15,127,250 ha (62%)
Minimum Amount of Functional Habitat to be Restored³		731,964 ha (3%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 15,859,214 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Northwest Territories South (Northwest Territories)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Taiga Plains ecozone.

Type of selection	
Broad scale	Mature forests (jack pine, spruce, tamarack) of 100 years or older, and open coniferous habitat. Large areas of spruce peatland and muskeg with preference for bogs over fens and upland and lowland black spruce forests with abundant lichens and sedge and moss availability. Flatter areas with smaller trees and willows, hills and higher ground.
Calving	Open coniferous forests, tussock tundra, low shrub, riparian, recent burned areas, south and west aspects and Hills and higher locations. Muskegs, marshes, staying close to water sources. Caribou observed on small islands of mature black spruce or mixed forests within peatlands, in old burns at the edge of wetlands, in alder thickets with abundant standing water and on lake shores.
Post-calving	Muskegs or areas with access to muskegs, open meadows on higher ground, close to water (lakes and rivers) and mixed bush areas. Open coniferous forests with abundant lichens, low shrub, riparian, tussock tundra, sparsely vegetative habitat, recent burns and west aspects. Old burns and neighbouring remnant unburned forests selected in late spring and early summer.
Rutting	Open coniferous and mixedwood forests, low shrub, riparian, tussock tundra, recent burns and west aspect. Still use muskegs that harbor ground lichen and sedges, mixed bush areas, areas of higher ground. Regenerating burns and sparsely vegetated habitat.
Winter	Open coniferous forests (black spruce and pine) that provide adequate cover with abundant lichens, riparian areas. Caribou observed in muskeg areas in early winter. Spruce-lichen forests, fire regenerated, sparsely vegetated habitat, herbaceous and tall shrub habitat and sphagnum moss with scattered spruce. As snow depth increases, they remain more often in areas of dense pine or thickly wooded black spruce, with hanging lichen and remains access to open, mixed vegetation for ground forage.
Travel	Females show high fidelity to calving sites among years (i.e. within 14.5 km). Many caribou shift the pattern of use based on seasonal preferences, in large multi-habitat areas. Rates of movement increase during the rut and are greatest in winter.
Avoidance	Avoid edge habitat. Avoid closed mixed forests, and water during calving. Avoid closed deciduous and mixed forest in summer, fall. Closed coniferous forests may be avoided in winter but are used as snow accumulates. Caribou may avoid water in the fall, although there are reports that they are seen along or crossing water bodies. Avoid forest stand < 10 yrs old during summer. Avoid roads (including winter roads), cutlines and open bog areas. Do not frequent burned areas in the mid- to late winter even as travel corridors. Avoid lower and wetter muskeg areas in mid to late winter.

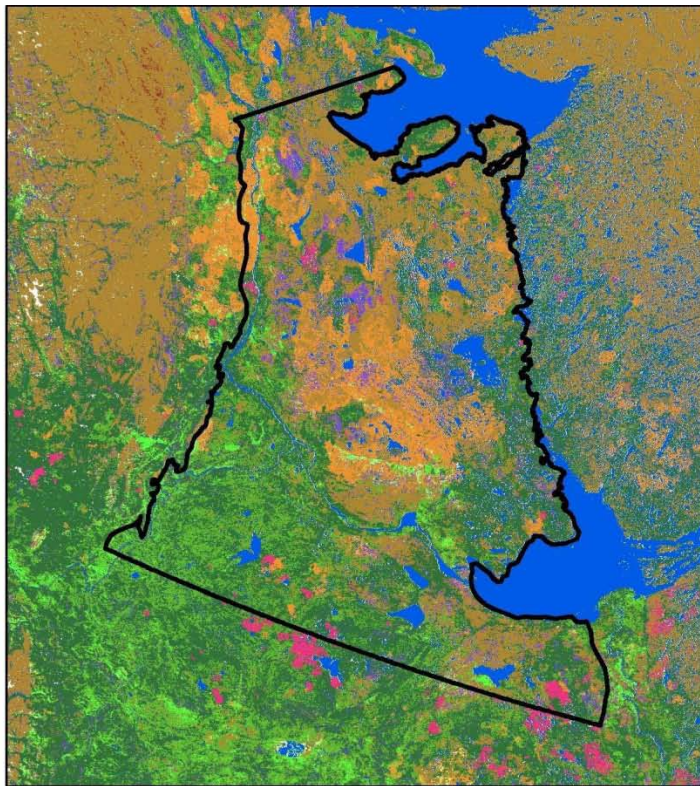
Table 2: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.

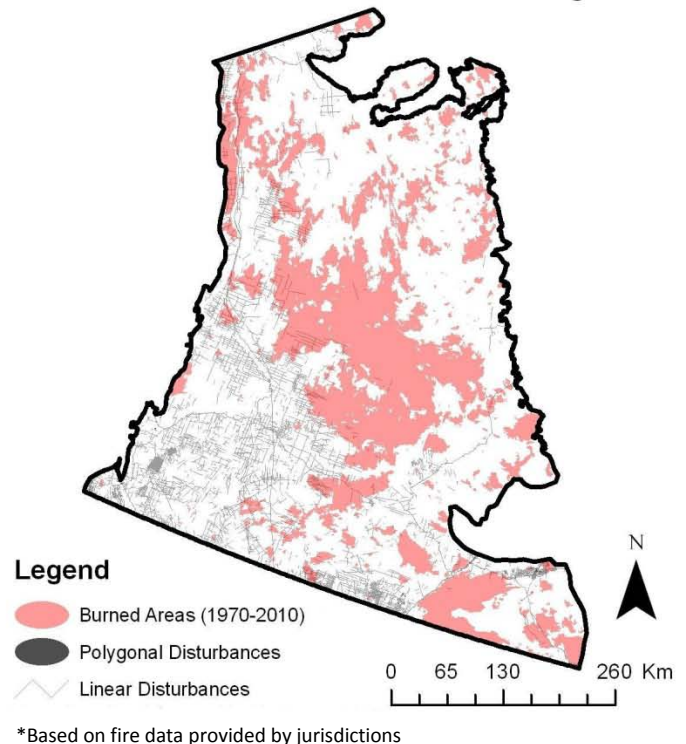
Critical Habitat Identification: Northwest Territories South (Northwest Territories)

Type of selection	Description
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.
Winter	Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens. Use of small lakes, rock outcrops on lakes for lichen access. Mature forest > 50 yrs old. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.
Avoidance	Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round. Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat. Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks. Avoidance of water.

D) Additional Information:



Disturbances Across Caribou Range



Landcover

- Water
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Shrub
- Herbaceous
- Wetland
- Cropland
- Rock Outcrop
- Recent Burn
- Old Burn
- Built-Up

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
(Legend reclassified by EC)
With NTDB 1:250,000 Hydrology Layer

Disturbance Type and Amount:

Burned Areas = 29%

Buffered⁴ Anthropogenic (no reservoirs) = 10%

Total Habitat Disturbance = 38%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Calendar (British Columbia)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

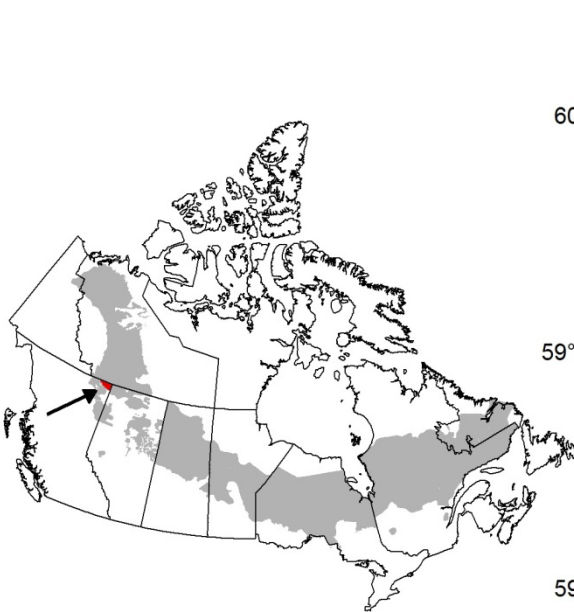


Figure 1: Keymap of the general location of the local population (in red).

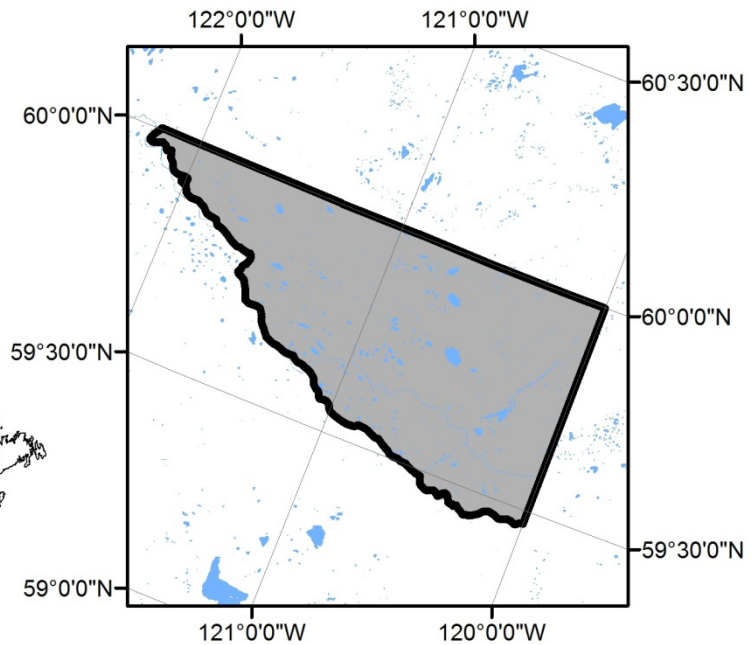


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	496,393 ha
	Population size	291
	Population trend	Unknown
	Total Habitat Disturbance	302,800 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	496,393 ha (100%)
	B) Total Habitat Disturbance ¹	302,800 ha (61%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	193,593 ha (39%)
Minimum Amount of Functional Habitat to be Restored³		129,062 ha (26%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 322,655 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Calendar (British Columbia)

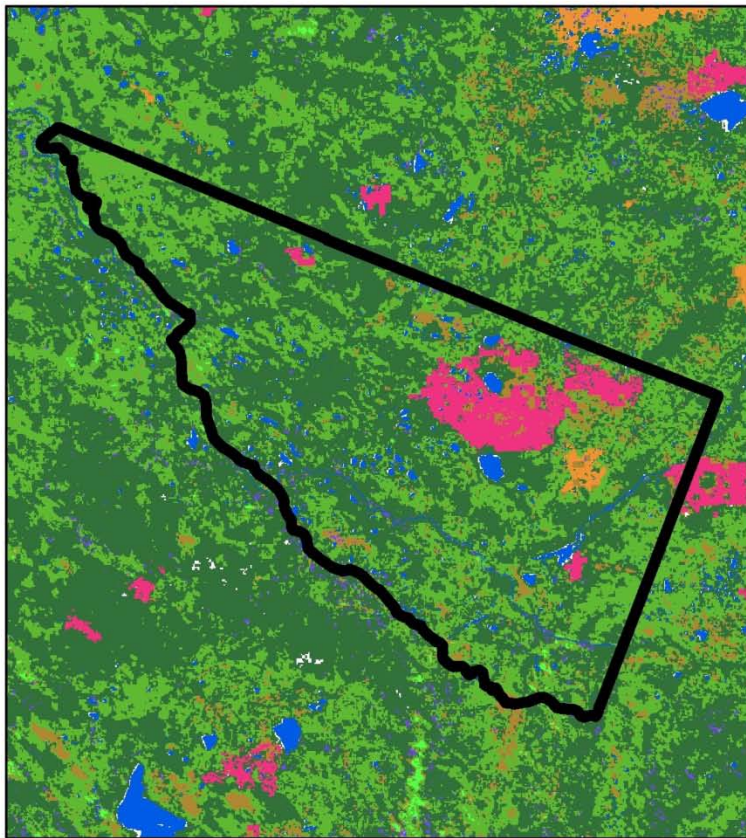
C) Type: Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Taiga Plains ecozone.

Type of selection	Description
Broad scale	Mature forests (jack pine, spruce, tamarack) of 100 years or older, and open coniferous habitat. Large areas of spruce peatland and muskeg with preference for bogs over fens and upland and lowland black spruce forests with abundant lichens and sedge and moss availability. Flatter areas with smaller trees and willows, hills and higher ground.
Calving	Open coniferous forests, tussock tundra, low shrub, riparian, recent burned areas, south and west aspects and Hills and higher locations. Muskegs, marshes, staying close to water sources. Caribou observed on small islands of mature black spruce or mixed forests within peatlands, in old burns at the edge of wetlands, in alder thickets with abundant standing water and on lake shores.
Post-calving	Muskegs or areas with access to muskegs, open meadows on higher ground, close to water (lakes and rivers) and mixed bush areas. Open coniferous forests with abundant lichens, low shrub, riparian, tussock tundra, sparsely vegetative habitat, recent burns and west aspects. Old burns and neighbouring remnant unburned forests selected in late spring and early summer.
Rutting	Open coniferous and mixedwood forests, low shrub, riparian, tussock tundra, recent burns and west aspect. Still use muskegs that harbor ground lichen and sedges, mixed bush areas, areas of higher ground. Regenerating burns and sparsely vegetated habitat.
Winter	Open coniferous forests (black spruce and pine) that provide adequate cover with abundant lichens, riparian areas. Caribou observed in muskeg areas in early winter. Spruce-lichen forests, fire regenerated, sparsely vegetated habitat, herbaceous and tall shrub habitat and sphagnum moss with scattered spruce. As snow depth increases, they remain more often in areas of dense pine or thickly wooded black spruce, with hanging lichen and remains access to open, mixed vegetation for ground forage.
Travel	Females show high fidelity to calving sites among years (i.e. within 14.5 km). Many caribou shift the pattern of use based on seasonal preferences, in large multi-habitat areas. Rates of movement increase during the rut and are greatest in winter.
Avoidance	Avoid edge habitat. Avoid closed mixed forests, and water during calving. Avoid closed deciduous and mixed forest in summer, fall. Closed coniferous forests may be avoided in winter but are used as snow accumulates. Caribou may avoid water in the fall, although there are reports that they are seen along or crossing water bodies. Avoid forest stand < 10 yrs old during summer. Avoid roads (including winter roads), cutlines and open bog areas. Do not frequent burned areas in the mid- to late winter even as travel corridors. Avoid lower and wetter muskeg areas in mid to late winter.

Critical Habitat Identification: Calendar (British Columbia)

D) Additional Information:



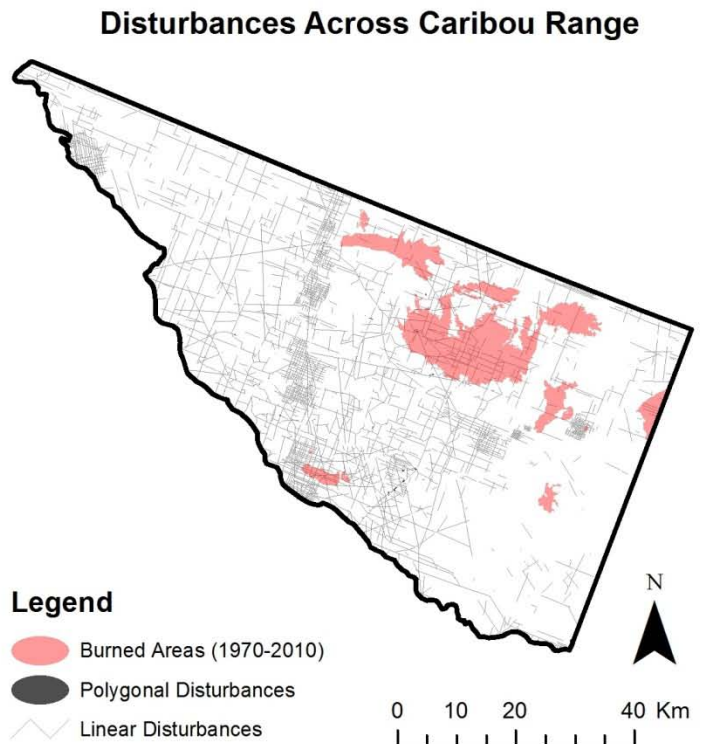
Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)

Legend reclassified by EC

With NTDB 1:250,000 Hydrology Layer



*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 8%

Buffered³ Anthropogenic (no reservoirs) = 58%

Total Habitat Disturbance = 61%⁴

³ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁴ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Bistcho (British Columbia)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

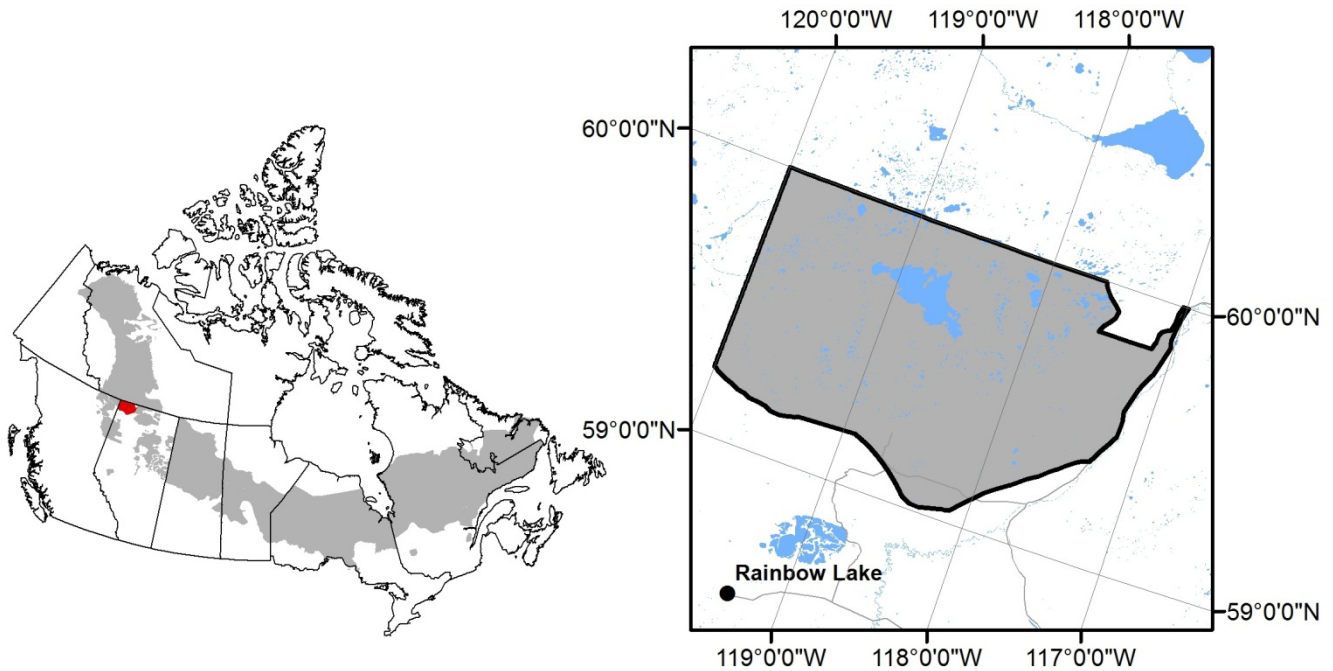


Figure 1: Keymap of the general location of the local population (in red).

Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	1,436,555 ha
	Population size	195
	Population trend	Declining
	Total Habitat Disturbance	1,019,954 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	1,436,555 ha (100%)
	B) Total Habitat Disturbance ¹	1,019,954 ha (71%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	416,601 ha (29%)
Minimum Amount of Functional Habitat to be Restored³		517,160 ha (36%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 933,761ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Bistcho (British Columbia)

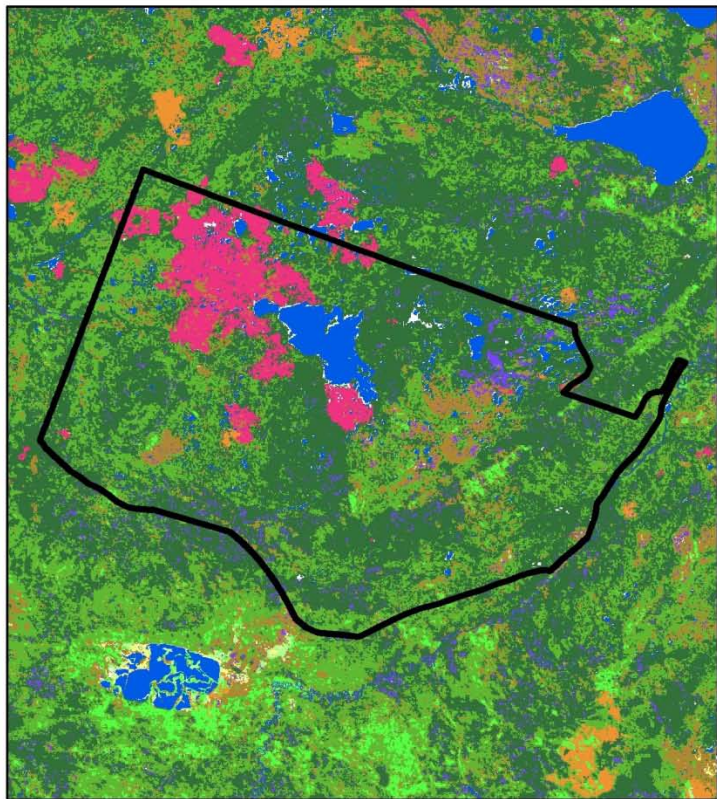
C) Type: Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Taiga Plains ecozone.

Type of selection	Description
Broad scale	Mature forests (jack pine, spruce, tamarack) of 100 years or older, and open coniferous habitat. Large areas of spruce peatland and muskeg with preference for bogs over fens and upland and lowland black spruce forests with abundant lichens and sedge and moss availability. Flatter areas with smaller trees and willows, hills and higher ground.
Calving	Open coniferous forests, tussock tundra, low shrub, riparian, recent burned areas, south and west aspects and Hills and higher locations. Muskegs, marshes, staying close to water sources. Caribou observed on small islands of mature black spruce or mixed forests within peatlands, in old burns at the edge of wetlands, in alder thickets with abundant standing water and on lake shores.
Post-calving	Muskegs or areas with access to muskegs, open meadows on higher ground, close to water (lakes and rivers) and mixed bush areas. Open coniferous forests with abundant lichens, low shrub, riparian, tussock tundra, sparsely vegetative habitat, recent burns and west aspects. Old burns and neighbouring remnant unburned forests selected in late spring and early summer.
Rutting	Open coniferous and mixedwood forests, low shrub, riparian, tussock tundra, recent burns and west aspect. Still use muskegs that harbor ground lichen and sedges, mixed bush areas, areas of higher ground. Regenerating burns and sparsely vegetated habitat.
Winter	Open coniferous forests (black spruce and pine) that provide adequate cover with abundant lichens, riparian areas. Caribou observed in muskeg areas in early winter. Spruce-lichen forests, fire regenerated, sparsely vegetated habitat, herbaceous and tall shrub habitat and sphagnum moss with scattered spruce. As snow depth increases, they remain more often in areas of dense pine or thickly wooded black spruce, with hanging lichen and remains access to open, mixed vegetation for ground forage.
Travel	Females show high fidelity to calving sites among years (i.e. within 14.5 km). Many caribou shift the pattern of use based on seasonal preferences, in large multi-habitat areas. Rates of movement increase during the rut and are greatest in winter.
Avoidance	Avoid edge habitat. Avoid closed mixed forests, and water during calving. Avoid closed deciduous and mixed forest in summer, fall. Closed coniferous forests may be avoided in winter but are used as snow accumulates. Caribou may avoid water in the fall, although there are reports that they are seen along or crossing water bodies. Avoid forest stand < 10 yrs old during summer. Avoid roads (including winter roads), cutlines and open bog areas. Do not frequent burned areas in the mid- to late winter even as travel corridors. Avoid lower and wetter muskeg areas in mid to late winter.

Critical Habitat Identification: Bistcho (British Columbia)

D) Additional Information:

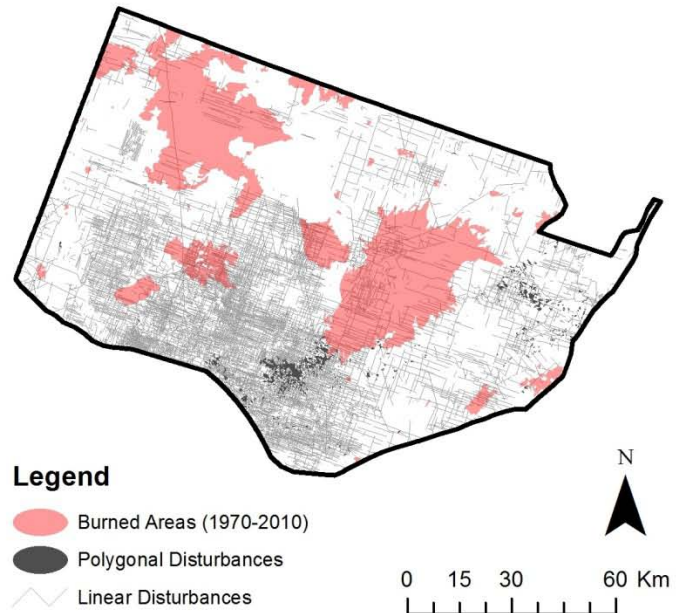


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 20%

Buffered⁴ Anthropogenic (no reservoirs) = 61%

Total Habitat Disturbance = 71%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Yates (Alberta)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

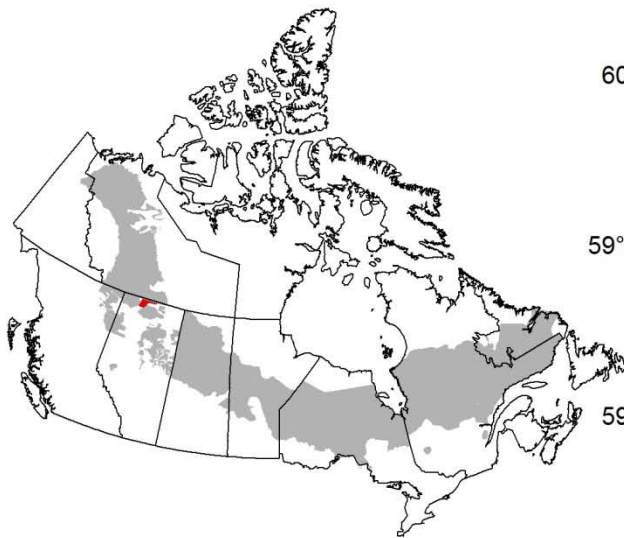


Figure 1: Keymap of the general location of the local population (in red).

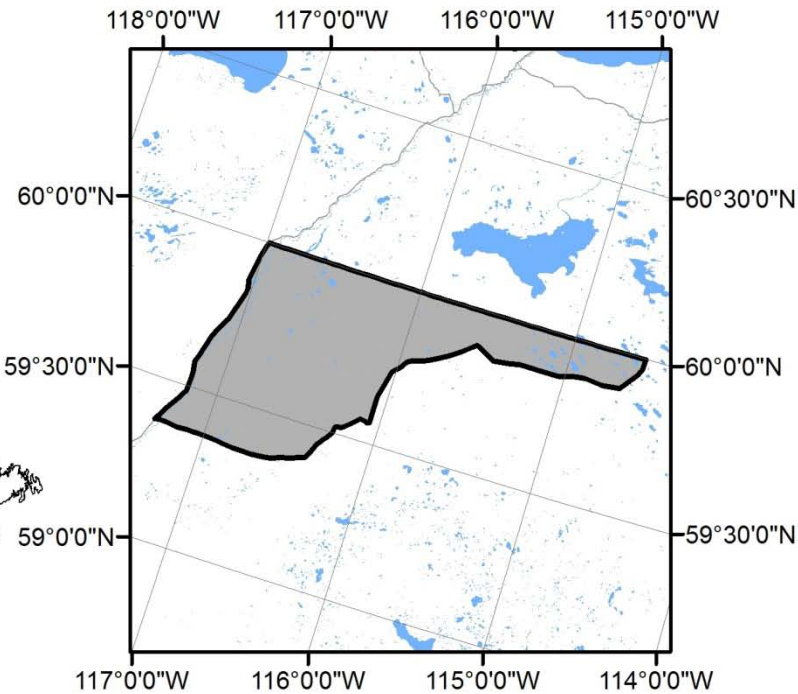


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required		
Range Attributes	Range Size	523,094 ha
	Population size	350
	Population trend	Stable
	Total Habitat Disturbance	319,087 ha
Range Assessment	Assessment of the likelihood of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	523,094 ha (100%)
	B) Total Habitat Disturbance ¹	319,087 ha (61%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	204,007 ha (39%)
Minimum Amount of Functional Habitat to be Restored ³		136,004 ha (26%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 340,011 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Yates (Alberta)

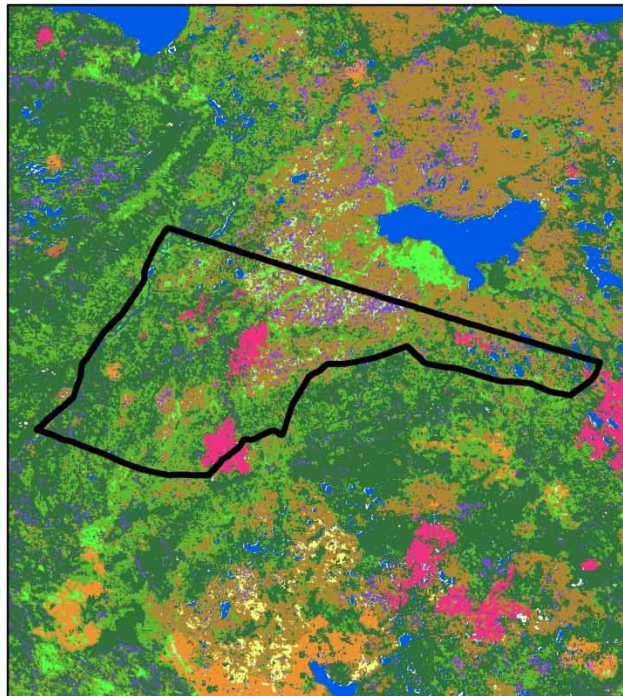
C) Type: Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Taiga Plains ecozone.

Type of selection	
Broad scale	Mature forests (jack pine, spruce, tamarack) of 100 years or older, and open coniferous habitat. Large areas of spruce peatland and muskeg with preference for bogs over fens and upland and lowland black spruce forests with abundant lichens and sedge and moss availability. Flatter areas with smaller trees and willows, hills and higher ground.
Calving	Open coniferous forests, tussock tundra, low shrub, riparian, recent burned areas, south and west aspects and Hills and higher locations. Muskegs, marshes, staying close to water sources. Caribou observed on small islands of mature black spruce or mixed forests within peatlands, in old burns at the edge of wetlands, in alder thickets with abundant standing water and on lake shores.
Post-calving	Muskegs or areas with access to muskegs, open meadows on higher ground, close to water (lakes and rivers) and mixed bush areas. Open coniferous forests with abundant lichens, low shrub, riparian, tussock tundra, sparsely vegetative habitat, recent burns and west aspects. Old burns and neighbouring remnant unburned forests selected in late spring and early summer.
Rutting	Open coniferous and mixedwood forests, low shrub, riparian, tussock tundra, recent burns and west aspect. Still use muskegs that harbor ground lichen and sedges, mixed bush areas, areas of higher ground. Regenerating burns and sparsely vegetated habitat.
Winter	Open coniferous forests (black spruce and pine) that provide adequate cover with abundant lichens, riparian areas. Caribou observed in muskeg areas in early winter. Spruce-lichen forests, fire regenerated, sparsely vegetated habitat, herbaceous and tall shrub habitat and sphagnum moss with scattered spruce. As snow depth increases, they remain more often in areas of dense pine or thickly wooded black spruce, with hanging lichen and remains access to open, mixed vegetation for ground forage.
Travel	Females show high fidelity to calving sites among years (i.e. within 14.5 km). Many caribou shift the pattern of use based on seasonal preferences, in large multi-habitat areas. Rates of movement increase during the rut and are greatest in winter.
Avoidance	Avoid edge habitat. Avoid closed mixed forests, and water during calving. Avoid closed deciduous and mixed forest in summer, fall. Closed coniferous forests may be avoided in winter but are used as snow accumulates. Caribou may avoid water in the fall, although there are reports that they are seen along or crossing water bodies. Avoid forest stand < 10 yrs old during summer. Avoid roads (including winter roads), cutlines and open bog areas. Do not frequent burned areas in the mid- to late winter even as travel corridors. Avoid lower and wetter muskeg areas in mid to late winter.

Critical Habitat Identification: Yates (Alberta)

D) Additional Information:

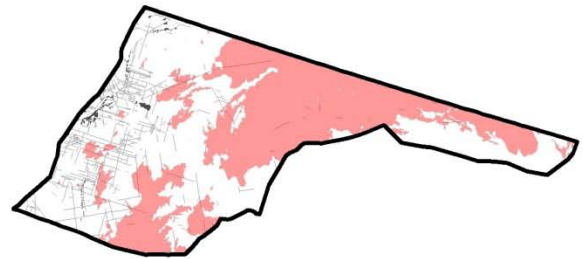


Landcover

Water	Shrub	Rock Outcrop
Coniferous Forest	Herbaceous	Recent Burn
Deciduous Forest	Wetland	Old Burn
Mixed Forest	Cropland	Built-Up

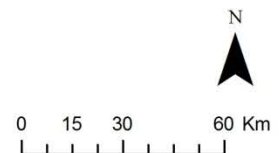
MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances



*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 43%

Buffered⁴ Anthropogenic (no reservoirs) = 21%

Total Habitat Disturbance = 61%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Caribou Mountains (British Columbia)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

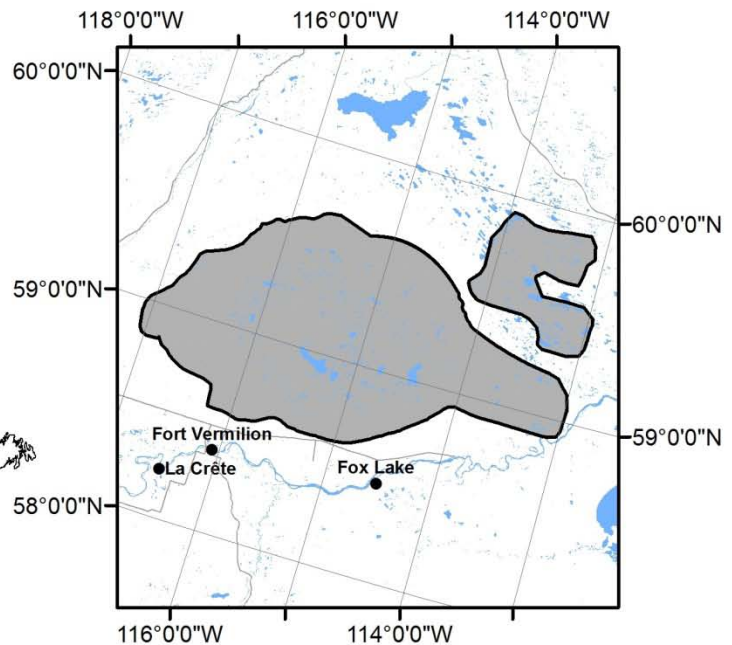


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	2,069,000 ha
	Population size	315-394
	Population trend	Declining
	Total Habitat Disturbance	1,179,330 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Critical Habitat	A) Range Size	2,069,000 ha (100%)
	B) Total Habitat Disturbance ¹	1,179,330 ha (57%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	889,670 ha (43%)
Minimum Amount of Functional Habitat to be Restored³		455,180 (22%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 1,344,850 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Caribou Mountains (British Columbia)

C) Type: Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Taiga Plains ecozone.

Type of selection	Description
Broad scale	Mature forests (jack pine, spruce, tamarack) of 100 years or older, and open coniferous habitat. Large areas of spruce peatland and muskeg with preference for bogs over fens and upland and lowland black spruce forests with abundant lichens and sedge and moss availability. Flatter areas with smaller trees and willows, hills and higher ground.
Calving	Open coniferous forests, tussock tundra, low shrub, riparian, recent burned areas, south and west aspects and Hills and higher locations. Muskegs, marshes, staying close to water sources. Caribou observed on small islands of mature black spruce or mixed forests within peatlands, in old burns at the edge of wetlands, in alder thickets with abundant standing water and on lake shores.
Post-calving	Muskegs or areas with access to muskegs, open meadows on higher ground, close to water (lakes and rivers) and mixed bush areas. Open coniferous forests with abundant lichens, low shrub, riparian, tussock tundra, sparsely vegetative habitat, recent burns and west aspects. Old burns and neighbouring remnant unburned forests selected in late spring and early summer.
Rutting	Open coniferous and mixedwood forests, low shrub, riparian, tussock tundra, recent burns and west aspect. Still use muskegs that harbor ground lichen and sedges, mixed bush areas, areas of higher ground. Regenerating burns and sparsely vegetated habitat.
Winter	Open coniferous forests (black spruce and pine) that provide adequate cover with abundant lichens, riparian areas. Caribou observed in muskeg areas in early winter. Spruce-lichen forests, fire regenerated, sparsely vegetated habitat, herbaceous and tall shrub habitat and sphagnum moss with scattered spruce. As snow depth increases, they remain more often in areas of dense pine or thickly wooded black spruce, with hanging lichen and remains access to open, mixed vegetation for ground forage.
Travel	Females show high fidelity to calving sites among years (i.e. within 14.5 km). Many caribou shift the pattern of use based on seasonal preferences, in large multi-habitat areas. Rates of movement increase during the rut and are greatest in winter.
Avoidance	Avoid edge habitat. Avoid closed mixed forests, and water during calving. Avoid closed deciduous and mixed forest in summer, fall. Closed coniferous forests may be avoided in winter but are used as snow accumulates. Caribou may avoid water in the fall, although there are reports that they are seen along or crossing water bodies. Avoid forest stand < 10 yrs old during summer. Avoid roads (including winter roads), cutlines and open bog areas. Do not frequent burned areas in the mid- to late winter even as travel corridors. Avoid lower and wetter muskeg areas in mid to late winter.

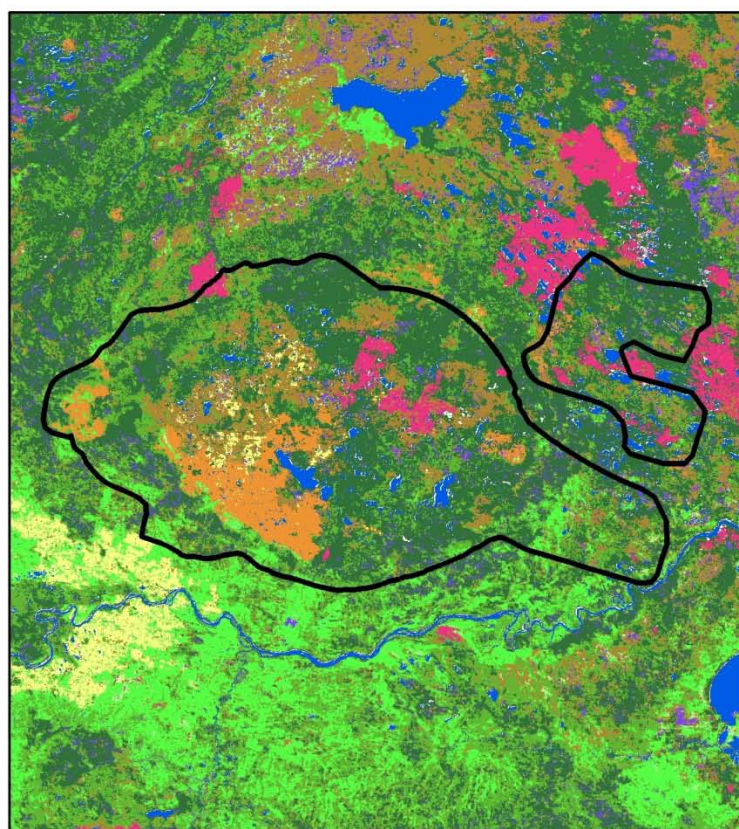
Table 2: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.

Critical Habitat Identification: Caribou Mountains (British Columbia)

Type of selection	Description
Winter	<p>Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens.</p> <p>Use of small lakes, rock outcrops on lakes for lichen access.</p> <p>Mature forest > 50 yrs old.</p> <p>Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.</p>
Avoidance	<p>Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round.</p> <p>Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat.</p> <p>Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks.</p> <p>Avoidance of water.</p>

D) Additional Information:

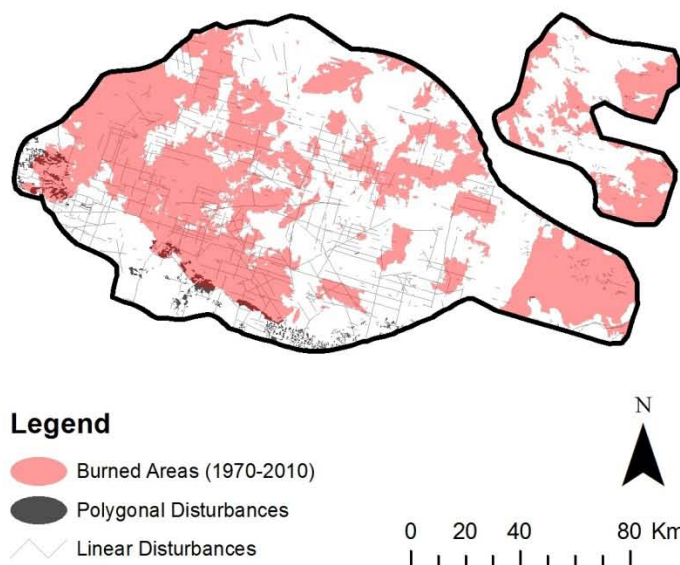


Landcover

- Water
- Shrub
- Rock Outcrop
- Coniferous Forest
- Herbaceous
- Recent Burn
- Deciduous Forest
- Wetland
- Old Burn
- Mixed Forest
- Cropland
- Built-Up

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
 Legend reclassified by EC
 With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 44%

Buffered⁴ Anthropogenic (no reservoirs) = 23%

Total Habitat Disturbance = 57%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Red Earth (Alberta)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

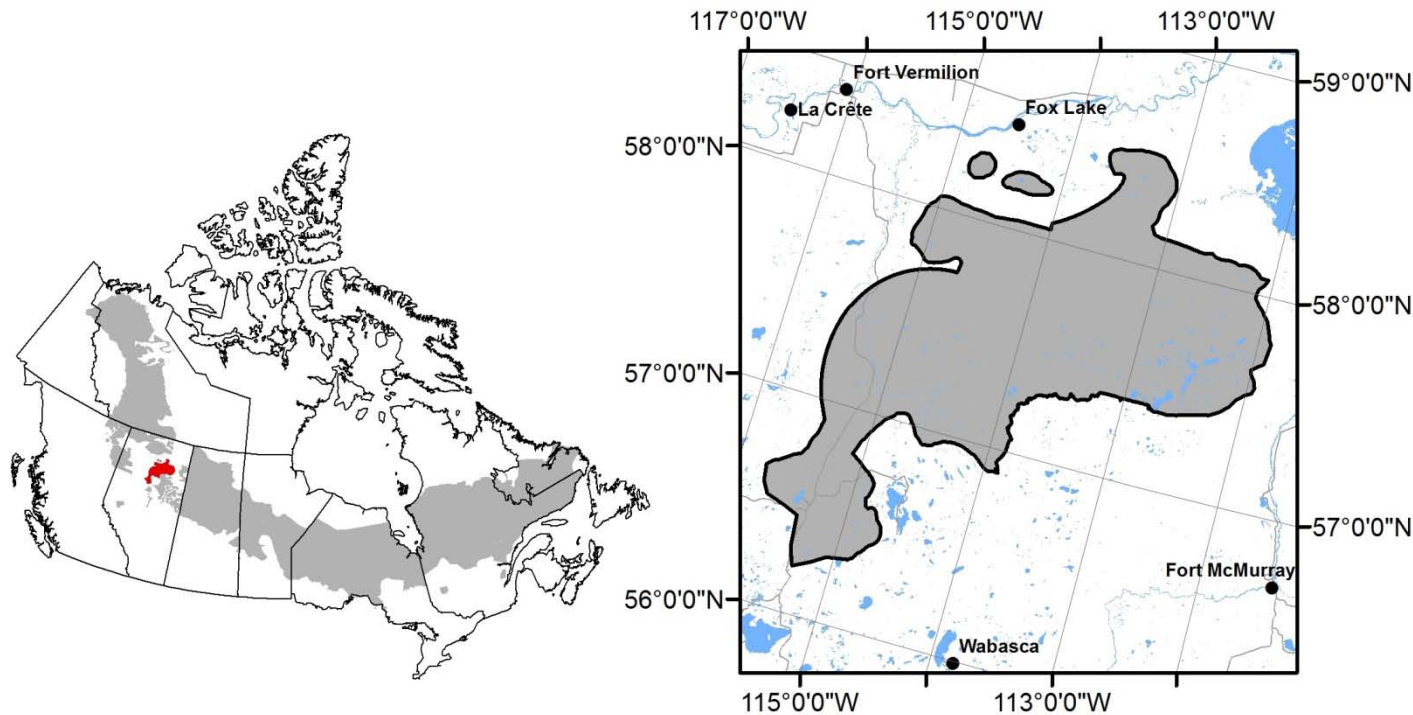


Figure 1: Keymap of the general location of the local population (in red).

Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required		
Range Attributes	Range Size	2,473,729 ha
	Population size	172-206
	Population trend	Declining
	Total Habitat Disturbance	1,533,712 ha
Range Assessment	Assessment of the likelihood of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	2,473,729 ha (100%)
	B) Total Habitat Disturbance ¹	1,533,712 ha (62%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	940,017 ha (38%)
Minimum Amount of Functional Habitat to be Restored ³		667,907 (27%)
¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).		
² The initial Critical Habitat amount will increase over 50 years to 1,607,924 ha (65%), as identified in the amended Recovery Strategy.		
³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.		

Critical Habitat Identification: Red Earth (Alberta)

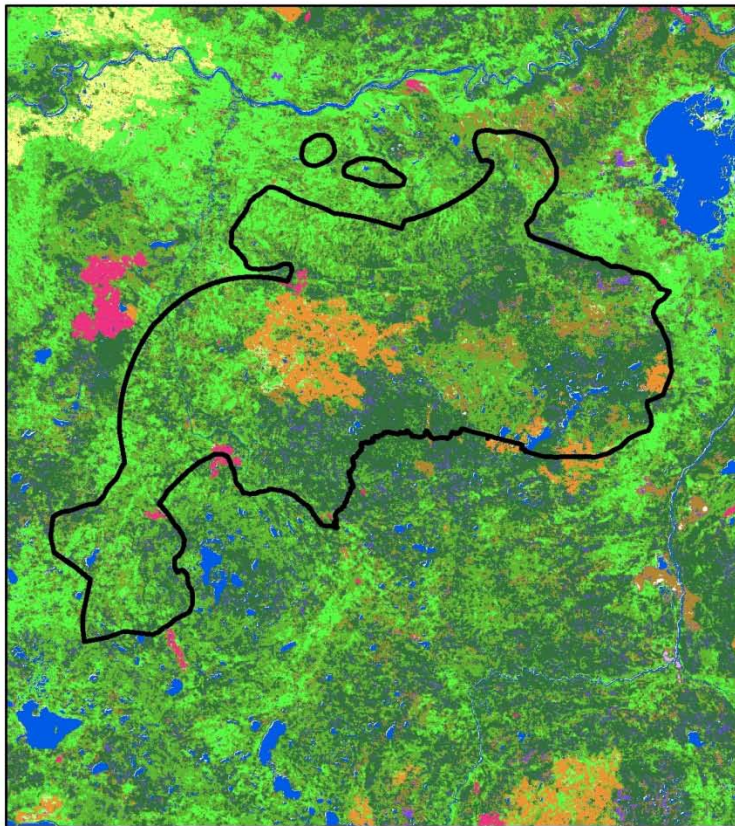
C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.
Winter	Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens. Use of small lakes, rock outcrops on lakes for lichen access. Mature forest > 50 yrs old. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.
Avoidance	Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round. Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat. Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks. Avoidance of water.

Critical Habitat Identification: Red Earth (Alberta)

D) Additional Information:

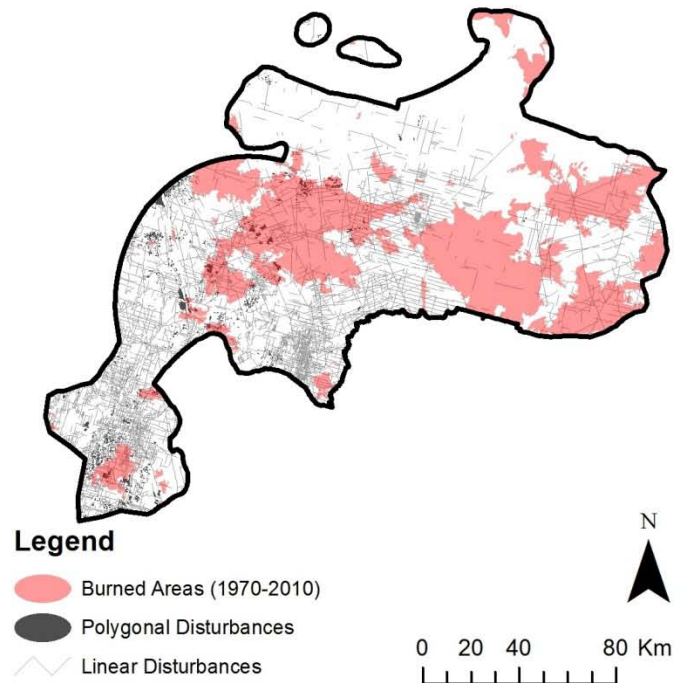


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 30%

Buffered⁴ Anthropogenic (no reservoirs) = 44%

Total Habitat Disturbance = 62%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Richardson (Alberta)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

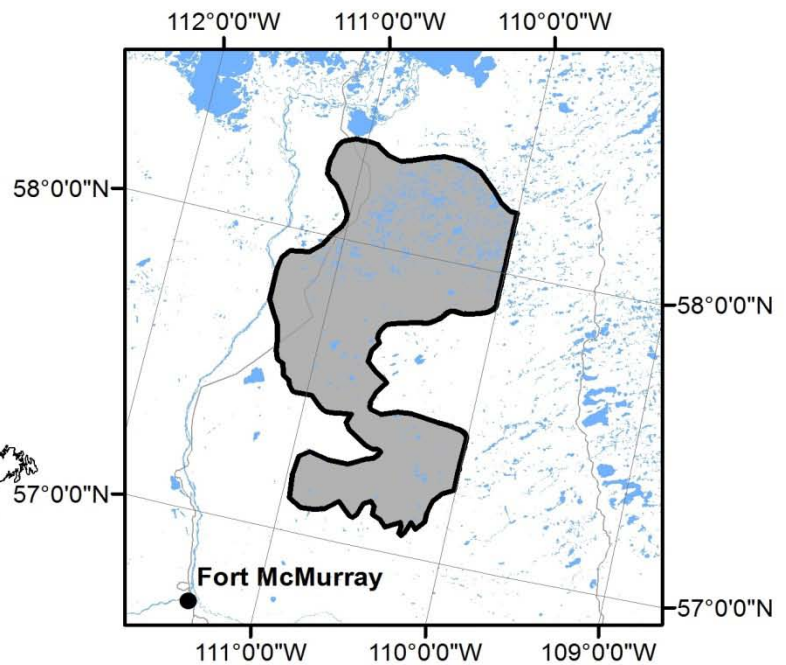


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	707,350 ha
	Population size	150
	Population trend	Unknown
	Total Habitat Disturbance	580,027 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	707,350 ha (100%)
	B) Total Habitat Disturbance ¹	580,027 ha (82%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	127,323 ha (18%)
Minimum Amount of Functional Habitat to be Restored³		332,455 ha (47%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 459,778 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Richardson (Alberta)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

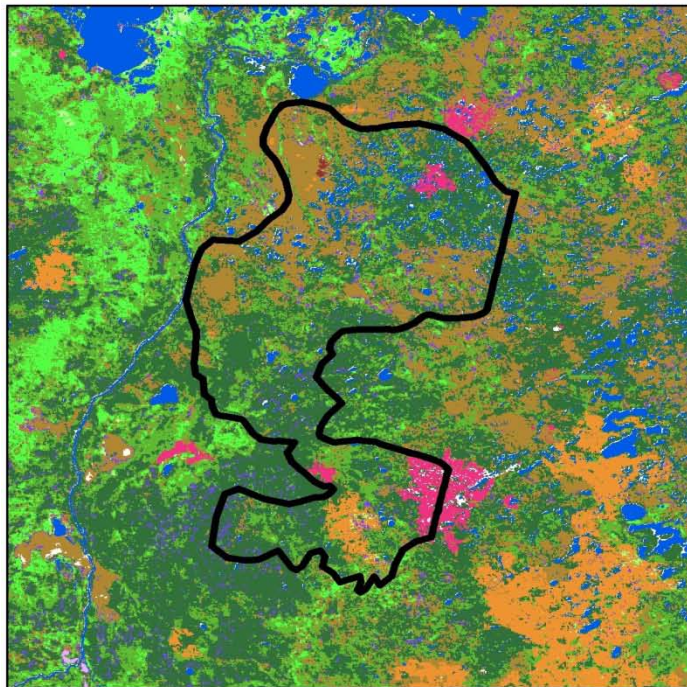
Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.
Winter	Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens. Use of small lakes, rock outcrops on lakes for lichen access. Mature forest > 50 yrs old. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.
Avoidance	Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round. Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat. Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks. Avoidance of water.

Table 2: Biophysical attributes of boreal caribou habitat in the Boreal Shield West ecozone.

Type of selection	Description
Broad scale	Conifer/tamarack-dominated peatland complexes, muskegs or bogs, use dry islands in the middle of muskegs and upland moderate to dense mature conifer forests (jack pine, black spruce, tamarack) with abundant lichens. Hilly or higher ground, lots of smaller lakes in area.
Calving	Peatlands, stands dominated by black spruce, mature forest stands and treed muskeg all used for calving. Caribou will use islands, small lakes, lakeshores during calving.
Post-calving	Wooded lakeshores, islands, sparsely treed rock, upland conifer-spruce and treed muskeg are used in summer. Sites with a high abundance of arboreal lichen are important for foraging in some areas. Dense conifer and mixed forest are also used.
Rutting	Dense and sparse conifer and mixed forests. Open riparian habitats are also used during the rut.
Winter	Mature upland spruce, pine stands and treed muskeg. Jack pine dominated forests. Caribou select sparse and dense conifer, mixed forests and treed bogs. In some areas caribou will select habitat with greater visibility and further away from forest edges.
Travel	Some males move > 100 km during the rutting season. Traditional travel routes between summer and winter ranges occur in large peatland complexes. Caribou migrate in a north to south pattern.
Avoidance	Avoid shrub-rich habitats and hardwood-dominated stands. Avoidance of conifer stands that are not black spruce, deciduous stands, shrub-rich fens and wetlands during calving. Avoid recent burns and disturbed/fragmented areas, including roads.

Critical Habitat Identification: Richardson (Alberta)

D) Additional Information:

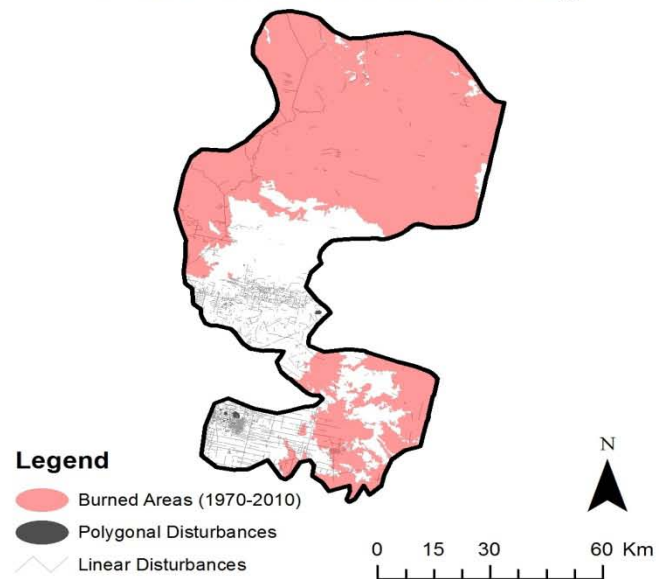


Landcover



MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 67%

Buffered⁴ Anthropogenic (no reservoirs) = 22%

Total Habitat Disturbance = 82%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Davy-Athabasca (Saskatchewan)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

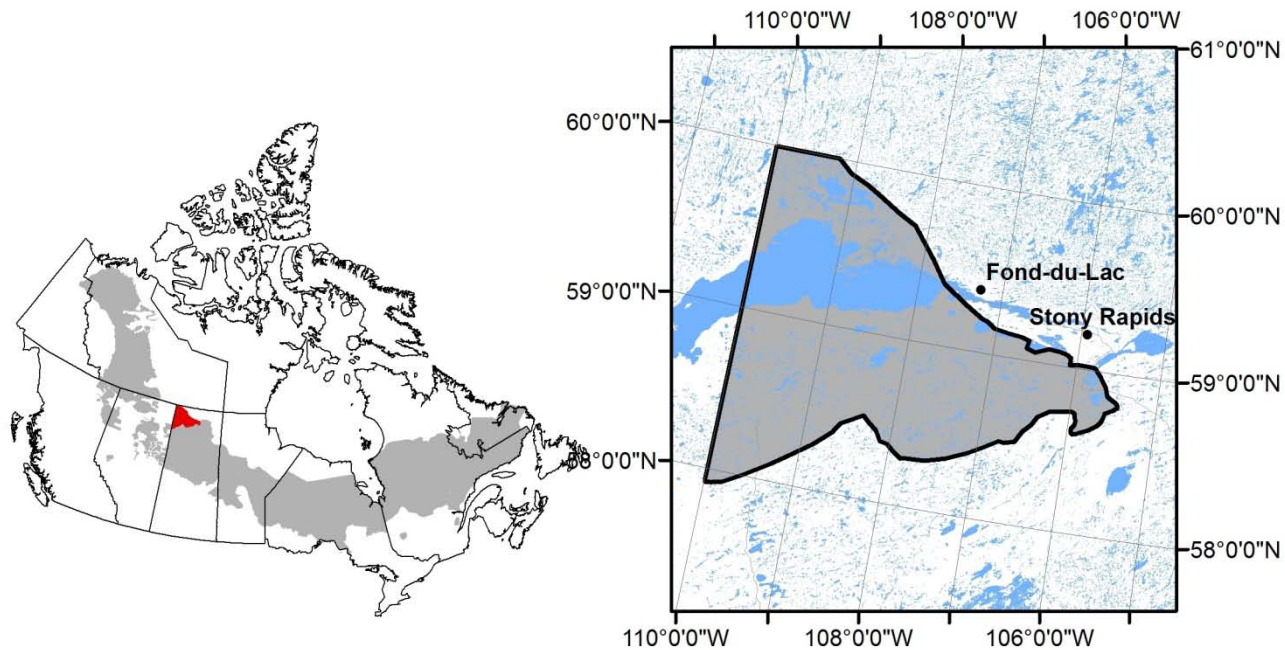


Figure 1: Keymap of the general location of the local population (in red).

Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required		
Range Attributes	Range Size	3,186,758 ha
	Population size	310
	Population trend	Unknown
	Total Habitat Disturbance	1,943,922 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	3,186,758 ha (100%)
	B) Total Habitat Disturbance ¹	1,943,922 ha (61%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	1,242,836 ha (39%)
Minimum Amount of Functional Habitat to be Restored ³		828,557 ha (26%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 2,071,393 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Davy-Athabasca (Saskatchewan)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Shield West ecozone.

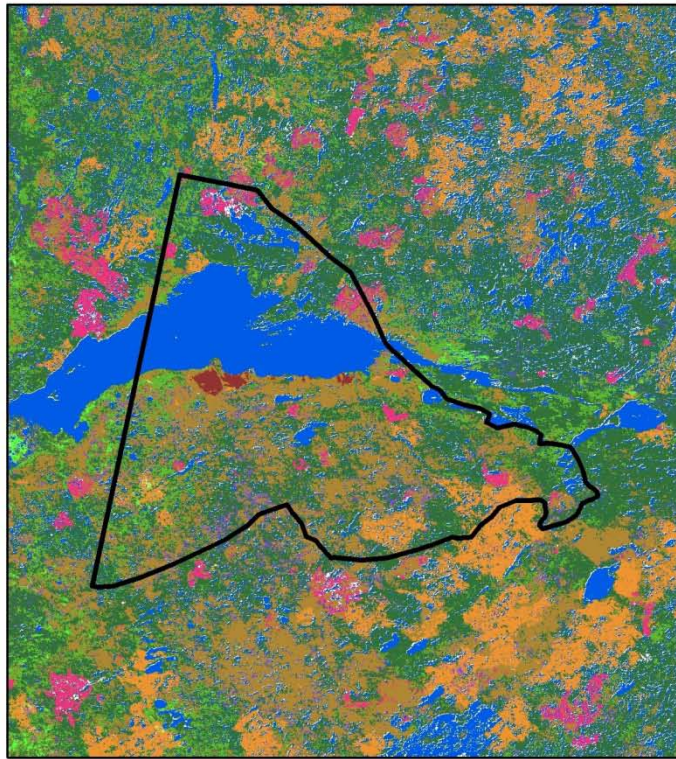
Type of selection	Description
Broad scale	Conifer/tamarack-dominated peatland complexes, muskegs or bogs, use dry islands in the middle of muskegs and upland moderate to dense mature conifer forests (jack pine, black spruce, tamarack) with abundant lichens. Hilly or higher ground, lots of smaller lakes in area.
Calving	Peatlands, stands dominated by black spruce, mature forest stands and treed muskeg all used for calving. Caribou will use islands, small lakes, lakeshores during calving.
Post-calving	Wooded lakeshores, islands, sparsely treed rock, upland conifer-spruce and treed muskeg are used in summer. Sites with a high abundance of arboreal lichen are important for foraging in some areas. Dense conifer and mixed forest are also used.
Rutting	Dense and sparse conifer and mixed forests. Open riparian habitats are also used during the rut.
Winter	Mature upland spruce, pine stands and treed muskeg. Jack pine dominated forests. Caribou select sparse and dense conifer, mixed forests and treed bogs. In some areas caribou will select habitat with greater visibility and further away from forest edges.
Travel	Some males move > 100 km during the rutting season. Traditional travel routes between summer and winter ranges occur in large peatland complexes. Caribou migrate in a north to south pattern.
Avoidance	Avoid shrub-rich habitats and hardwood-dominated stands. Avoidance of conifer stands that are not black spruce, deciduous stands, shrub-rich fens and wetlands during calving. Avoid recent burns and disturbed/fragmented areas, including roads.

Table 2: Biophysical attributes of boreal caribou habitat in the Taiga Shield ecozone.

Type of selection	Description
Broad scale	Upland tundra dominated by ericaceous shrubs (<i>Ericaceae</i> spp.), lichen, grasses and sedges. Lowland tundra composed of peatland complexes (muskeg and string bogs), wetlands (swamps, marshes), lakes, rivers and riparian valleys. Dense mature jack pine and black spruce stands with balsam fir and tamarack present and open conifer forests with abundant lichens.
Calving	String bogs, treed bogs, small open wetlands (< 1 km ²), large muskeg, marshes along water bodies. Barren grounds. Calving on peninsulas and islands increases with amount of open water.
Post-calving	Forested wetlands. Hilly areas, coastal sites, along shorelines of water bodies (rivers, lakes, creeks), marshes with lichen availability.
Rutting	Open wetlands, swamps. Mature forests, mountainous terrain with forests of black spruce, tamarack and pine trees with abundant lichen.
Winter	Forested areas are used in years of low snow accumulation otherwise winter habitat selection reflects general avoidance of deep snow, including use of tundra habitat at higher elevations in mountainous regions and bogs along lakes or oceans. Forested wetlands. Tundra uplands and sand flats in proximity to water. Barren grounds. Bog edges, glacial erratics and bedrock erratics with lichen, and lakes for loafing or ruminating. Some use of mature white spruce and fir stands as alternative to habitat with arboreal lichens. Mix of Mature forest stands, mountainous terrain with forests of black spruce, tamarack and jack pine with abundant lichen.
Travel	Connectivity between selected habitat types important given reported patterns of movement among caribou. Some females travel 200 to 500 km from winter areas to calving sites. Females show fidelity to post-calving sites returning to within 6.7 km of a given location in consecutive years.
Avoidance	Avoidance of roads and areas recently burned.

Critical Habitat Identification: Davy-Athabasca (Saskatchewan)

D) Additional Information:

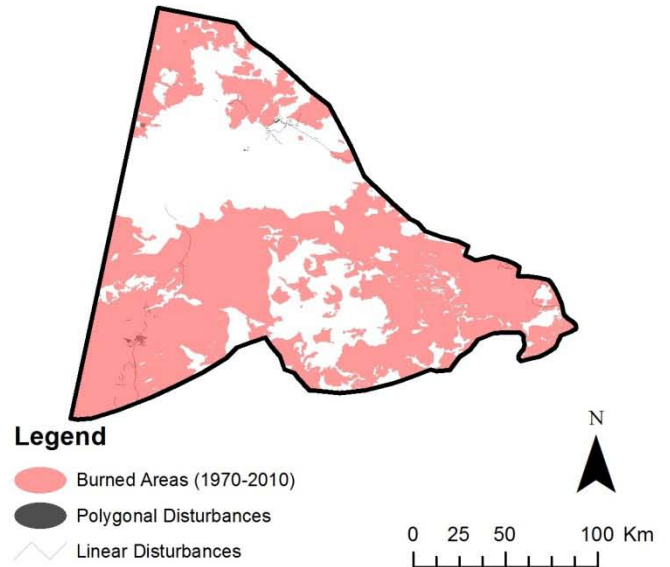


Landcover

Water	Shrub	Rock Outcrop
Coniferous Forest	Herbaceous	Recent Burn
Deciduous Forest	Wetland	Old Burn
Mixed Forest	Cropland	Built-Up

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 60%

Buffered⁴ Anthropogenic (no reservoirs) = 2%

Total Habitat Disturbance = 61%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Clearwater (Saskatchewan)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

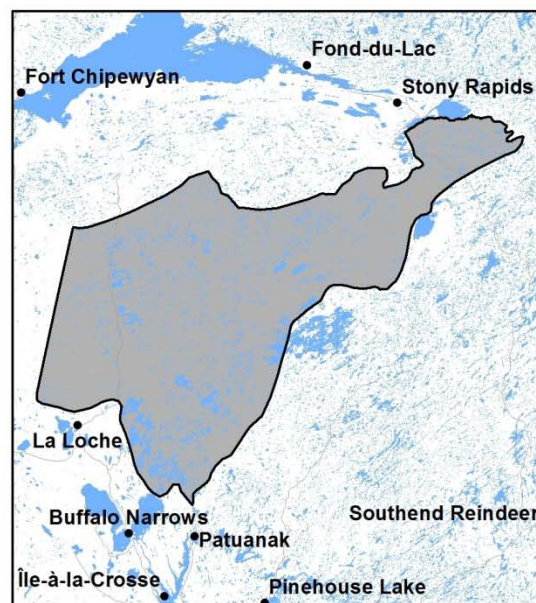


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	4,718,489 ha
	Population size	425
	Population trend	Unknown
	Total Habitat Disturbance	3,302,942 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	4,718,489 ha (100%)
	B) Total Habitat Disturbance ¹	3,302,942 ha (70%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	1,415,547 ha (30%)
Minimum Amount of Functional Habitat to be Restored³		1,651,471 ha (35%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 3,067,018 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Clearwater (Saskatchewan)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Shield West ecozone.

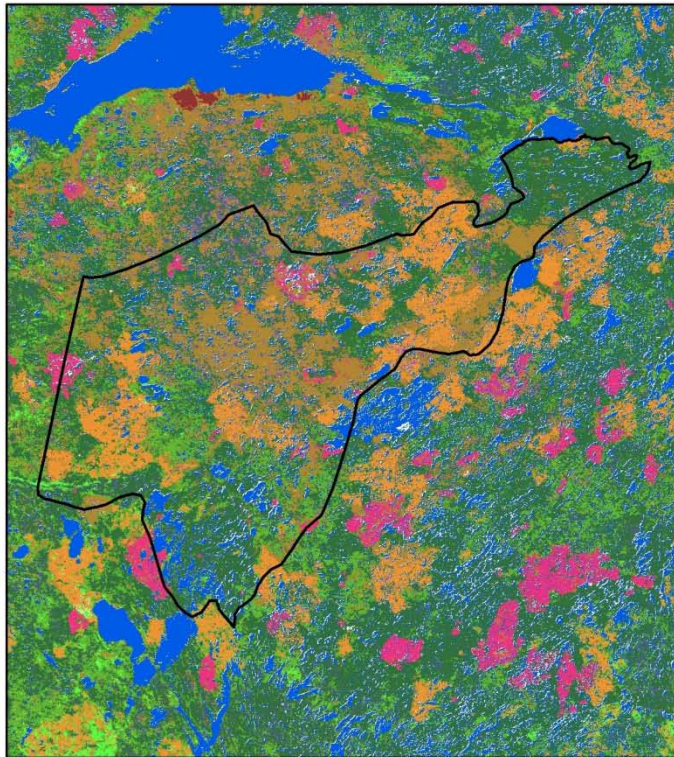
Type of selection	Description
Broad scale	Conifer/tamarack-dominated peatland complexes, muskegs or bogs, use dry islands in the middle of muskegs and upland moderate to dense mature conifer forests (jack pine, black spruce, tamarack) with abundant lichens. Hilly or higher ground, lots of smaller lakes in area.
Calving	Peatlands, stands dominated by black spruce, mature forest stands and treed muskeg all used for calving. Caribou will use islands, small lakes, lakeshores during calving.
Post-calving	Wooded lakeshores, islands, sparsely treed rock, upland conifer-spruce and treed muskeg are used in summer. Sites with a high abundance of arboreal lichen are important for foraging in some areas. Dense conifer and mixed forest are also used.
Rutting	Dense and sparse conifer and mixed forests. Open riparian habitats are also used during the rut.
Winter	Mature upland spruce, pine stands and treed muskeg. Jack pine dominated forests. Caribou select sparse and dense conifer, mixed forests and treed bogs. In some areas caribou will select habitat with greater visibility and further away from forest edges.
Travel	Some males move > 100 km during the rutting season. Traditional travel routes between summer and winter ranges occur in large peatland complexes. Caribou migrate in a north to south pattern.
Avoidance	Avoid shrub-rich habitats and hardwood-dominated stands. Avoidance of conifer stands that are not black spruce, deciduous stands, shrub-rich fens and wetlands during calving. Avoid recent burns and disturbed/fragmented areas, including roads.

Table 2: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.
Winter	Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens. Use of small lakes, rock outcrops on lakes for lichen access. Mature forest > 50 yrs old. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.
Avoidance	Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round. Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat. Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks. Avoidance of water.

Critical Habitat Identification: Clearwater (Saskatchewan)

D) Additional Information:

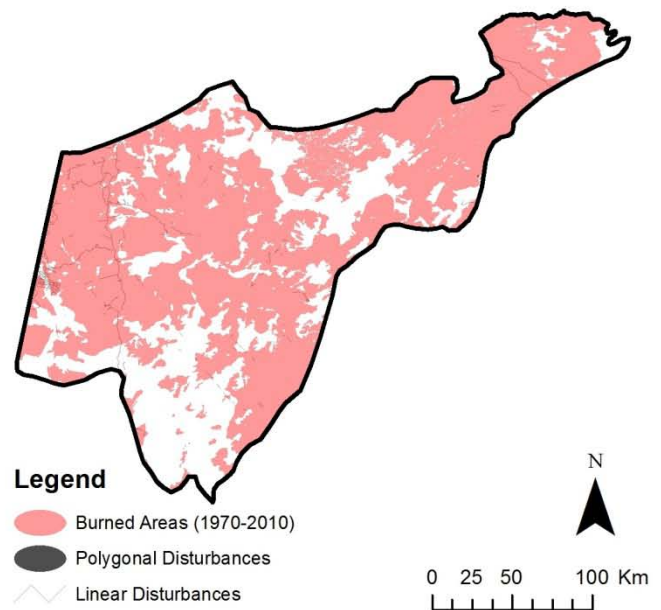


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 69%

Buffered⁴ Anthropogenic (no reservoirs) = 3%

Total Habitat Disturbance = 70%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Highrock-Key (Saskatchewan)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

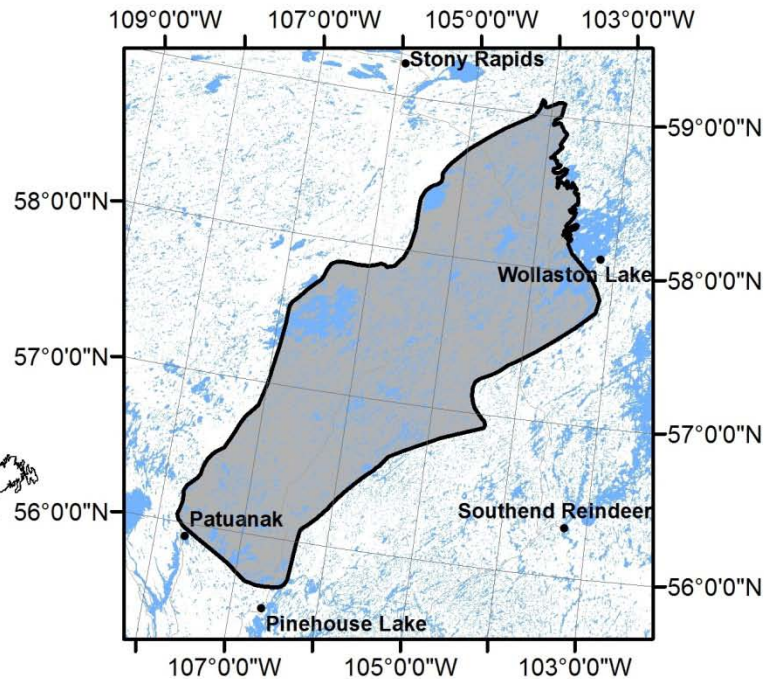


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required		
Range Attributes	Range Size	4,393,300 ha
	Population size	1060
	Population trend	Unknown
	Total Habitat Disturbance	2,811,712 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	4,393,300 ha (100%)
	B) Total Habitat Disturbance ¹	2,811,712 ha (64%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	1,581,588 ha (36%)
Minimum Amount of Functional Habitat to be Restored ³		1,274,057 ha (29%)
¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).		
² The initial Critical Habitat amount will increase over 50 years to 2,855,645 ha (65%), as identified in the amended Recovery Strategy.		
³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.		

Critical Habitat Identification: Highrock-Key (Saskatchewan)

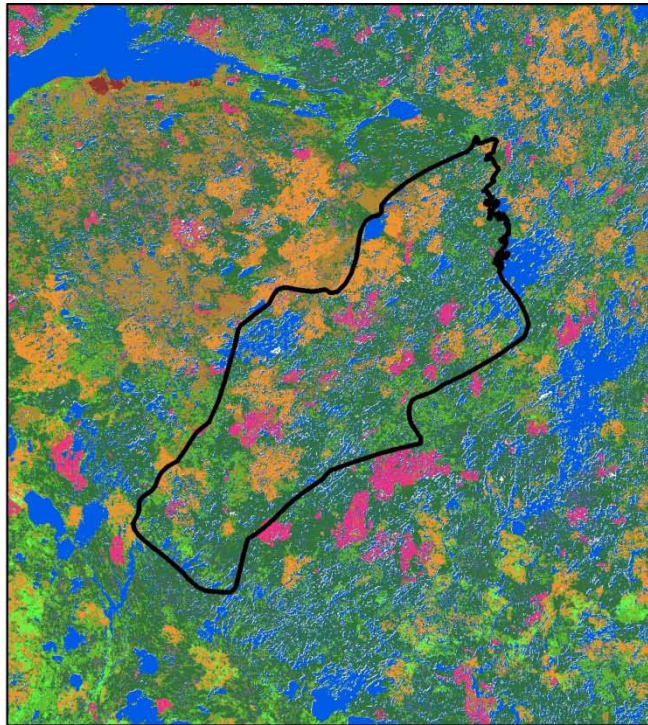
C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Shield West ecozone.

Type of selection	Description
Broad scale	Conifer/tamarack-dominated peatland complexes, muskegs or bogs, use dry islands in the middle of muskegs and upland moderate to dense mature conifer forests (jack pine, black spruce, tamarack) with abundant lichens. Hilly or higher ground, lots of smaller lakes in area.
Calving	Peatlands, stands dominated by black spruce, mature forest stands and treed muskeg all used for calving. Caribou will use islands, small lakes, lakeshores during calving.
Post-calving	Wooded lakeshores, islands, sparsely treed rock, upland conifer-spruce and treed muskeg are used in summer. Sites with a high abundance of arboreal lichen are important for foraging in some areas. Dense conifer and mixed forest are also used.
Rutting	Dense and sparse conifer and mixed forests. Open riparian habitats are also used during the rut.
Winter	Mature upland spruce, pine stands and treed muskeg. Jack pine dominated forests. Caribou select sparse and dense conifer, mixed forests and treed bogs. In some areas caribou will select habitat with greater visibility and further away from forest edges.
Travel	Some males move > 100 km during the rutting season. Traditional travel routes between summer and winter ranges occur in large peatland complexes. Caribou migrate in a north to south pattern.
Avoidance	Avoid shrub-rich habitats and hardwood-dominated stands. Avoidance of conifer stands that are not black spruce, deciduous stands, shrub-rich fens and wetlands during calving. Avoid recent burns and disturbed/fragmented areas, including roads.

Critical Habitat Identification: Highrock-Key (Saskatchewan)

D) Additional Information:

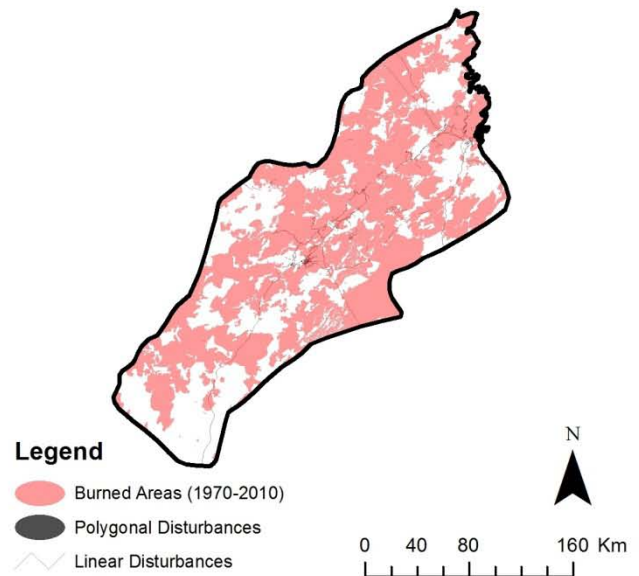


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 62%

Buffered⁴ Anthropogenic (no reservoirs) = 4%

Total Habitat Disturbance = 64%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Steephill-Foster (Saskatchewan)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.



Figure 1: Keymap of the general location of the local population (in red).

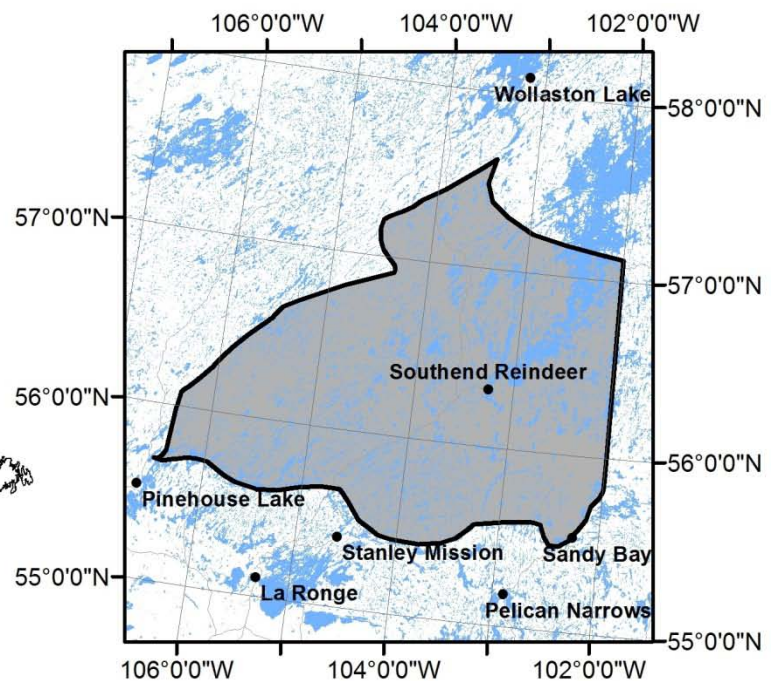


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required

Range Attributes	Range Size	4,221,619 ha
	Population size	1075
	Population trend	Unknown
	Total Habitat Disturbance	2,110,810 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	4,221,619 ha (100%)
	B) Total Habitat Disturbance ¹	2,110,810 ha (50%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	2,110,809 ha (50%)
Minimum Amount of Functional Habitat to be Restored³		633,243 ha (15%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 2,744,052 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Steephill-Foster (Saskatchewan)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Shield West ecozone.

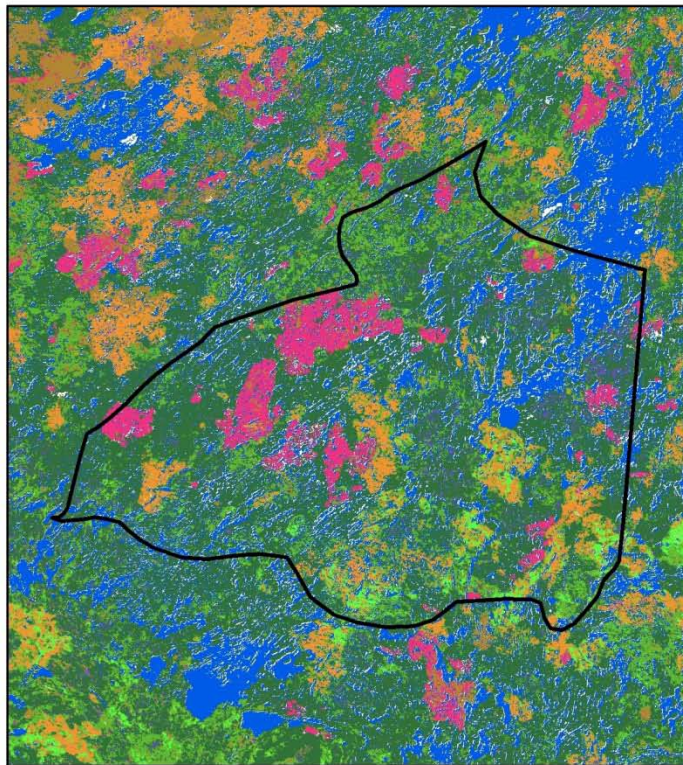
Type of selection	Description
Broad scale	Conifer/tamarack-dominated peatland complexes, muskegs or bogs, use dry islands in the middle of muskegs and upland moderate to dense mature conifer forests (jack pine, black spruce, tamarack) with abundant lichens. Hilly or higher ground, lots of smaller lakes in area.
Calving	Peatlands, stands dominated by black spruce, mature forest stands and treed muskeg all used for calving. Caribou will use islands, small lakes, lakeshores during calving.
Post-calving	Wooded lakeshores, islands, sparsely treed rock, upland conifer-spruce and treed muskeg are used in summer. Sites with a high abundance of arboreal lichen are important for foraging in some areas. Dense conifer and mixed forest are also used.
Rutting	Dense and sparse conifer and mixed forests. Open riparian habitats are also used during the rut.
Winter	Mature upland spruce, pine stands and treed muskeg. Jack pine dominated forests. Caribou select sparse and dense conifer, mixed forests and treed bogs. In some areas caribou will select habitat with greater visibility and further away from forest edges.
Travel	Some males move > 100 km during the rutting season. Traditional travel routes between summer and winter ranges occur in large peatland complexes. Caribou migrate in a north to south pattern.
Avoidance	Avoid shrub-rich habitats and hardwood-dominated stands. Avoidance of conifer stands that are not black spruce, deciduous stands, shrub-rich fens and wetlands during calving. Avoid recent burns and disturbed/fragmented areas, including roads.

Table 2: Biophysical attributes of boreal caribou habitat in the Boreal Plains ecozone.

Type of selection	Description
Broad scale	Late seral-stage (> 50 yrs old) conifer forest (jack pine, black spruce, tamarack), treed peatlands, muskegs or bogs, use dry islands in the middle of muskegs, with abundant lichens. Hilly or higher ground and small lakes. Restricted primarily to peatland complexes. Elevations of 1135 m. Selected old (>40 yrs) burns.
Calving	Bogs and mature forests selected for calving as well as islands and small lakes. Peatlands and stands dominated by black spruce and lowland black spruce stands within muskeg are used for calving.
Post-calving	Forest stands older than 50 yrs. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg are also selected during summer. Use lichen and low muskeg vegetation. In some areas, sites with abundant arboreal lichen are selected during summer.
Rutting	Mature forests. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands and muskeg during summer.
Winter	Treed peatlands, treed bog and treed fen and open fen complexes with > 50% peatland coverage with high abundance of lichens. Use of small lakes, rock outcrops on lakes for lichen access. Mature forest > 50 yrs old. Upland black spruce/jack pine forests, lowland black spruce, young jack pine and open and treed peatlands.
Avoidance	Avoid upland and fen habitats, aspen dominated stands, immature stands and large rivers all year round. Avoid matrix-type habitat, including areas with abundant shrubs, disturbed/fragmented habitats, hardwood/deciduous dominated forest stands, and edge habitat. Avoid recent burns, main roads, seismic lines, well sites and areas with a high density of cut blocks. Avoidance of water.

Critical Habitat Identification: Steephill-Foster (Saskatchewan)

D) Additional Information:

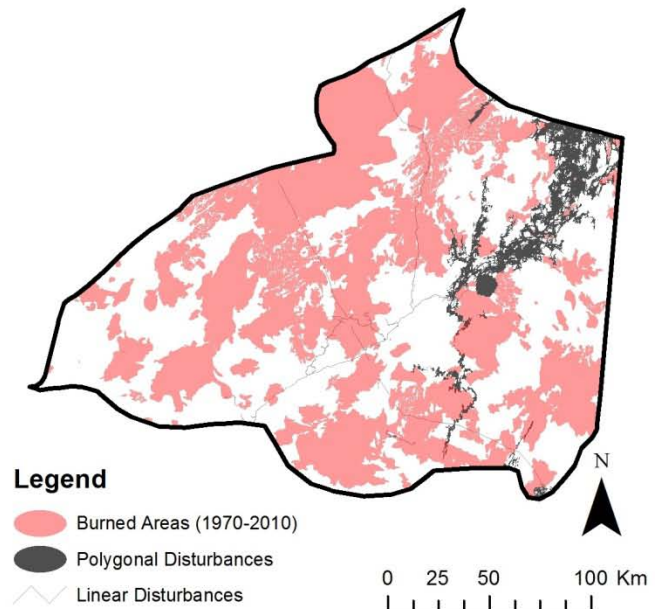


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 49%

Buffered³ Anthropogenic (no reservoirs) = 2%

Total Habitat Disturbance = 50%⁴

³ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁴ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.

Critical Habitat Identification: Kesagami (Ontario)

The identification of critical habitat for boreal caribou is described by three factors for each local population: i) Location of habitat; ii) Amount of habitat; and iii) Type of habitat.

A) **Location:** Where critical habitat is found.

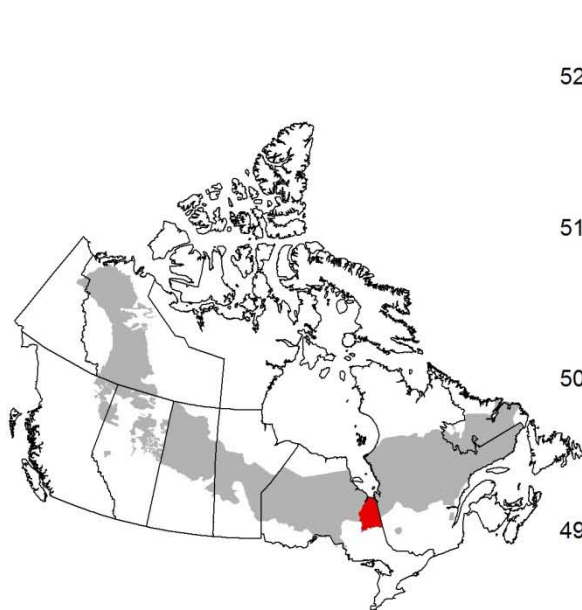


Figure 1: Keymap of the general location of the local population (in red).

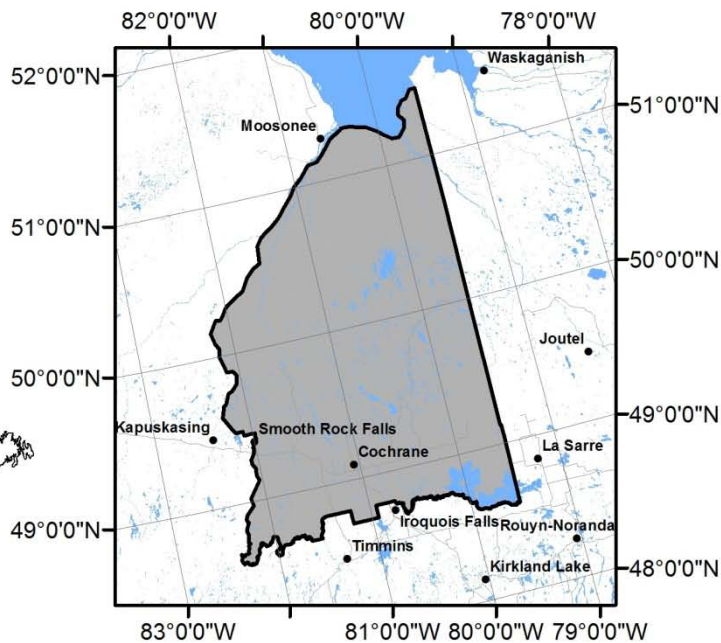


Figure 2: The geographic boundary within which critical habitat is located (in grey).

B) **Amount:** Quantity of critical habitat.

Table 1: Range Attributes and the Amount of Habitat Required		
Range Attributes	Range Size	4,766,463 ha
	Population size	492
	Population trend	Declining
	Total Habitat Disturbance	1,811,256 ha
Range Assessment	Assessment of the current condition of the range to support a self-sustaining local population	Not Self-Sustaining
Determination of Amount of Habitat	A) Range Size	4,766,463 ha (100%)
	B) Total Habitat Disturbance ¹	1,811,256 ha (38%)
	C) Undisturbed Habitat, Initial Critical Habitat ²	2,955,207 ha (62%)
Minimum Amount of Functional Habitat to be Restored ³		142,994 ha (3%)

¹ Total Habitat Disturbance reflects loss of functional habitat. It will be more than the associated disturbance footprint (e.g. 100 ha footprint could lead to 400 ha loss of functional habitat).

² The initial Critical Habitat amount will increase over 50 years to 3,098,201 ha (65%), as identified in the amended Recovery Strategy.

³ The minimum amount of functional habitat to be restored over 50 years, to improve the likelihood of the range being self-sustaining.

Critical Habitat Identification: Kesagami (Ontario)

C) **Type:** Biophysical attributes.

Table 1: Biophysical attributes of boreal caribou habitat in the Boreal Shield Central ecozone.

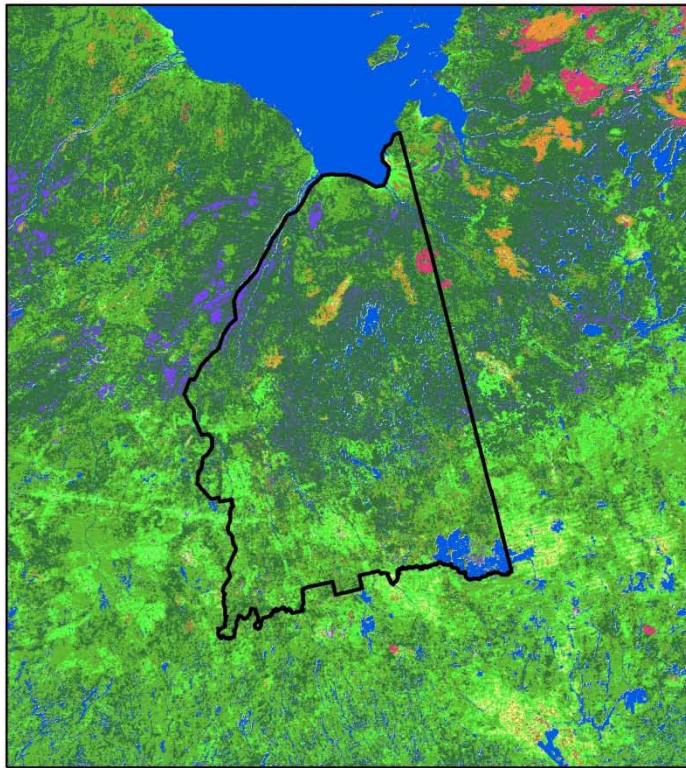
Type of selection	Description
Broad scale	Late seral-stage black spruce-dominated lowlands and jack pine dominated uplands. Open black spruce lowlands. Low-density late seral-stage jack pine or black spruce forests and black spruce/tamarack-dominated peatlands with abundant terrestrial and moderate arboreal lichens. Caribou also use areas with dry to moist sandy to loamy soils and shallow soils over bedrock. Elevations of 300 m. Intermediate values of Normalized Difference Vegetation Index. Selection for old (>40 yrs) burns.
Calving	Open canopies of mature black spruce and mesic peatland with ericaceous species for calving are selected for calving in the Claybelt region. Females with calves selected areas with more abundant ericaceous shrubs and terrestrial lichens during the summer compared to females without calves.
Winter	Large areas of contiguous forests dominated by black spruce. Open conifer forests or forests with lower tree densities where terrestrial and arboreal lichen are abundant and there is significant less snow (e.g. shorelines) are also selected.
Avoidance	Avoid recently downed woody debris, dense shrubs and larch during the calving season. Avoid mixed conifer and deciduous forests in winter. Areas of deep snow are also avoided during winter. Avoidance of roads and burns <40 yrs old.

Table 2: Biophysical attributes of boreal caribou habitat in the Hudson Plains ecozone.

Type of selection	Description
Broad scale	Habitats selected generally to reduce predation risk. Shrub rich treed muskeg and mature conifer forests abundant in lichens. Shorelines of deep lakes and rivers (birch trees). Poorly drained areas dominated by sedges, mosses and lichens, as well as open black spruce and tamarack forests. Elevations of 150m. Intermediate levels of ruggedness and Normalized Difference Vegetation Index.
Calving	Mature conifer stand with and without lichens and muskegs. Preference for higher altitudes compared to habitat use during other periods.
Post-calving	Fens, bogs and lakes.
Rutting	Wetlands and conifer stands with lichen. Mature and regenerating conifer stands are also used, albeit to a lesser degree. Caribou use hills in the lowlands, treed islands in muskegs with several different tree species.
Winter	Dense and mature conifer forests with lichens and wetlands. Peatlands dominated by open bogs and terrestrial lichens. Large patches of intermediate and mature black spruce, shrub-rich treed muskeg and mixed conifer stands all used in late winter.
Travel	Movements greatest in fall/winter when caribou transition from calving to winter habitat. Long range movements are greater in areas with high moose densities, presumably to reduce predation risk.
Avoidance	Avoid herbaceous areas and areas burned within 40 yrs. Deciduous-dominated forests, lichen woodlands and lichen heaths avoided during winter. Avoidance of human development (e.g. roads) provided sufficient caribou habitat remains. Habitats in proximity to human development are used in highly disturbed landscapes, presumably because there is no alternative.

Critical Habitat Identification: Kesagami (Ontario)

D) Additional Information:

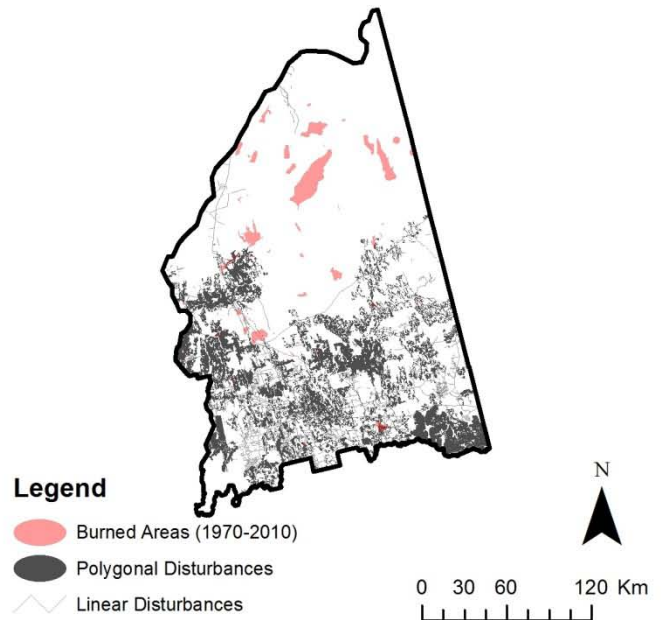


Landcover

- | | | |
|-------------------|------------|--------------|
| Water | Shrub | Rock Outcrop |
| Coniferous Forest | Herbaceous | Recent Burn |
| Deciduous Forest | Wetland | Old Burn |
| Mixed Forest | Cropland | Built-Up |

MODIS 2005 Landcover (250m Pixels) (Generated by CCRS)
Legend reclassified by EC
With NTDB 1:250,000 Hydrology Layer

Disturbances Across Caribou Range



Legend

- Burned Areas (1970-2010)
- Polygonal Disturbances
- Linear Disturbances

*Based on fire data provided by jurisdictions

Disturbance Type and Amount:

Burned Areas = 3%

Buffered⁴ Anthropogenic (no reservoirs) = 36%

Total Habitat Disturbance = 38%⁵

⁴ Buffered means a 500m buffer is applied to linear and polygonal disturbances.

⁵ Total Habitat Disturbance is non-overlapping which means anthropogenic disturbances and burned areas that overlap are not counted twice in the total.