

FOREST
HEALTH
MONITORING

2024
FOCUS STUDY

# DEPOSITION IMPACTS TO CARIBOU LICHEN

WBEA

VOLUME 1 - ECOLOGICAL OBSERVATIONS

# ACKNOWLEDGEMENTS

The Wood Buffalo Environmental Association (WBEA) and our members operate on Treaty 8 territory, the ancestral and traditional territory of the Dene and Cree Peoples, and in the Métis Homeland. We thank the Indigenous community organizations who are members of the WBEA for participating in and giving feedback on our monitoring programs. Indigenous Peoples have been integral in the development of the WBEA and it's monitoring programs.

The WBEA acknowledges the following Indigenous community member organizations who provided their time and expertise in the field for this study: Athabasca Chipewyan First Nation (ACFN), Mikisew Crew First Nation (MCFN), Fort McKay First Nation (FMFN), Fort McKay Métis Nation (FMMN), McMurray Métis, Fort McMurray 468 First Nation (FM468FN), Conklin Métis, and Lakeland Métis.

Community members' knowledge and lived experience provided an invaluable perspective on the state of the lichen and ecosystem at the Forest Health sites. WBEA staff had the opportunity to learn about the concerns and priorities of the community participants.

The WBEA also acknowledges all participants from the Forest Health Monitoring (FHM) workshops who offered their time and input in reviewing and providing recommendations on the direction of the FHM program. Participants included representatives from local Indigenous communities, industry, government, and WBEA staff and science advisors. This support allows the FHM program to continue to adapt to meet the current best practices and the needs of the WBEA's members.



## CARIBOU LICHEN (*Cladonia mitis*)



## MONKS HOOD LICHEN (*Hypogymnia physodes*)





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# SUMMARY

Caribou lichen (*Cladonia mitis*) was sampled during the long-term monitoring program for Monk's Hood lichen (*Hypogymnia physodes*). Samples of Caribou lichens were collected at 19 of the 25 Forest Health sites. The sample campaign occurred over 10 field days in mid- to late-September 2024.

There were 14 individuals representing 8 local Indigenous communities (Athabasca Chipewyan First Nation, Conklin Métis, Fort McKay First Nation, Fort McKay Métis Nation, Fort McMurray 468 First Nation, Lakeland Métis, McMurray Métis, and Mikisew Cree First Nation) that participated in the sampling campaign.

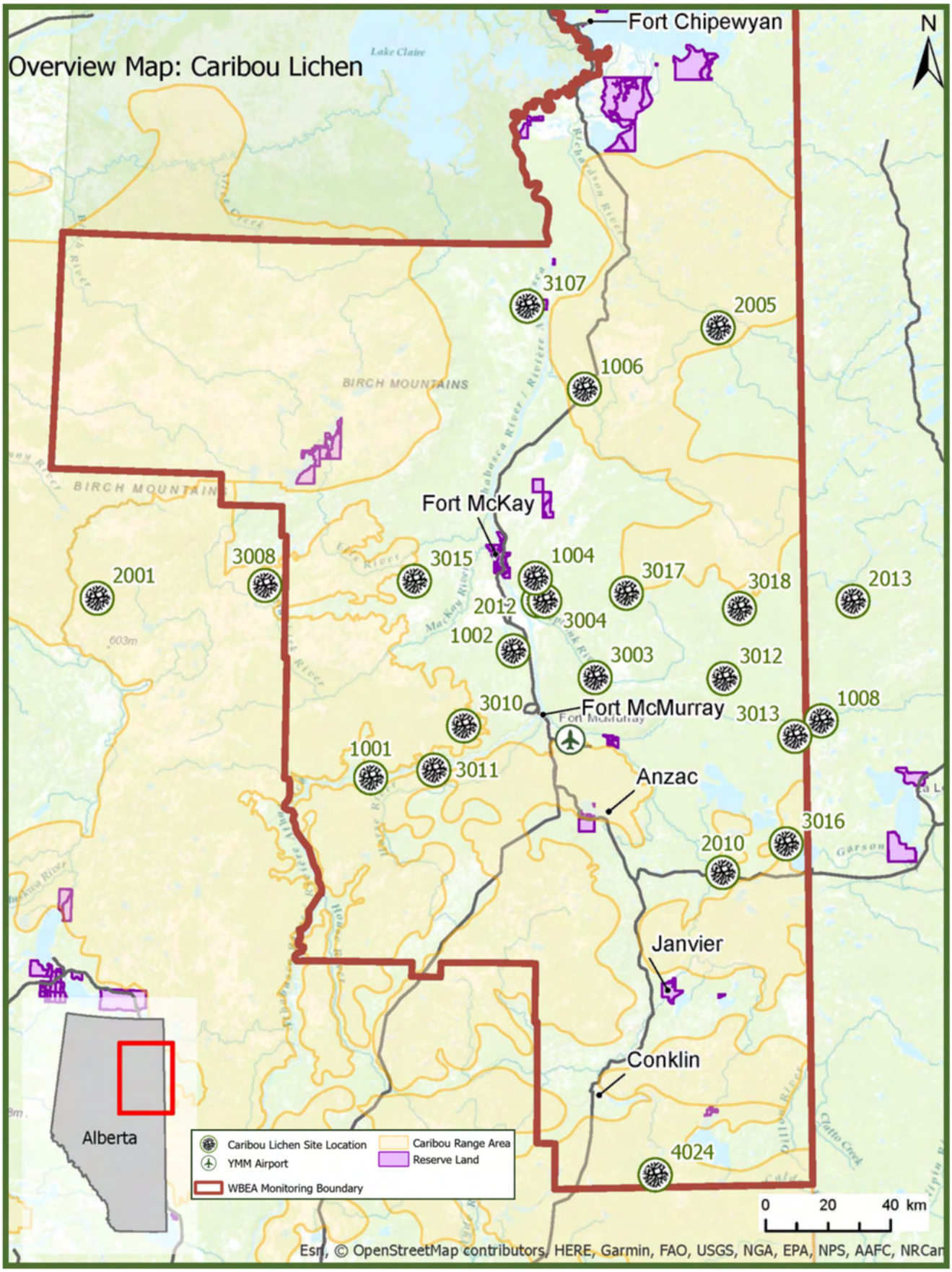
In addition to collecting lichen samples, field teams collected ecological observations about the state of both lichen species and the jack pine forest at all sites visited.

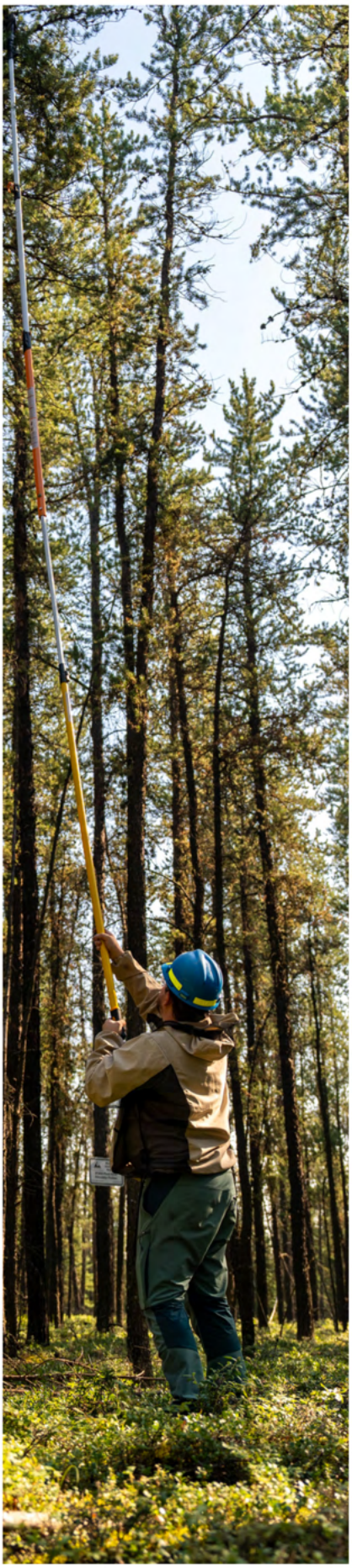
## KEY OBSERVATIONS

**Wildfire Impact** - Caribou lichen was noted to be in low abundance at Forest Health sites with previous wildfire burns. Sites not burned generally had a lot of Caribou lichen.

**Discoloration of Monk's Hood Lichen** – Unhealthy or dying lichen was noted at about half of the sites. This was noted as pink or dark spots on the lichen.

**Wildlife Presence** – Most sites had signs of wildlife including foraging signs, tracks and scat, bird species seen and heard, and squirrels storing mushrooms on tree branches to dry.


Overview Map: Caribou Lichen
Fort Chipewyan
N
Lake Claire
3107
2005
1006
BIRCH MOUNTAINS
BIRCH MOUNTAIN
Fort McKay
3008
2001
3015
1004
3017
3018
2013
2012
3004
1002
3003
3012
3010
Fort McMurray
3013
1008
1001
3011
Anzac
3016
2010
Janvier
Conklin
4024
Alberta
Caribou Lichen Site Location
YMM Airport
WBEA Monitoring Boundary
Caribou Range Area
Reserve Land
0
20
40 km
Esri, © OpenStreetMap contributors, HERE, Garmin, FAO, USGS, NGA, EPA, NPS, AAFC, NRCan



# BACKGROUND

## FOREST HEALTH MONITORING PROGRAM

The WBEA's Forest Health Monitoring (FHM) Program aims to understand the effects of emission deposition on the surrounding forests. The program combines soil, vegetation, air quality and deposition monitoring at remote locations.

The FHM Program began in the mid-1990's with the initial focus on acid deposition. Due to increased dust noted in the region, monitoring has evolved to include base cation and trace metals.

In 2024, the Forest Health Monitoring workshop series began to discuss current monitoring and future direction of the program. The FHM program continues to evolve and adapt to best meet the needs of the WBEA's members.

## FHM WORKSHOP SERIES

The WBEA hosted three 2-day workshops between November 2023 and April 2024. The intent of the workshops was to bring WBEA members together and review the FHM program prior to the 2024 campaign, gain an understanding of what members wanted from the program, and adapt the program accordingly.

Over 80 individuals participated including representatives from 10 Indigenous community organizations, 7 industry organizations, 2 government organizations, and various WBEA staff and science advisors.

# BACKGROUND

## KEY MONITORING INDICATORS - CARIBOU LICHEN

Concern for Woodland Caribou (*Rangifer tarandus*) and their habitat was raised during the workshop series. Eleven of the WBEA's Forest Health sites are within the Caribou habitat range. One of the main food sources of caribou is Caribou lichen (*Cladonia mitis*). This lichen species is abundant on the forest floor at many of the WBEA's Forest Health sites.

Since the early 1990's, the WBEA has been studying Monks Hood Lichen (*Hypogymnia physodes*) a type of tree lichen that grows on the branches of jack pine trees. This program was scheduled to run a sampling campaign in fall 2024, so adding caribou lichen to this field campaign, along with collecting observations on the health of the lichen and jack pine ecosystem was supported by the WBEA's technical committees and workshop participants.

## WORKSHOP PARTICIPANTS

Alberta Environment and Protected Areas
Alberta Energy Regulator
Athabasca Chipewyan First Nation
Canadian Natural Resources Ltd.
Cenovus Energy
Chard Métis Nation
Chipewyan Prairie First Nation
CNOOC International
Conklin Métis
Fort McKay First Nation
Fort McKay Métis Nation
Fort McMurray 468 First Nation
Hammerstone Infrastructure Materials Ltd
Imperial Oil Ltd.
Lakeland Métis
McMurray Métis
Mikisew Cree First Nation
Suncor Energy Inc
Syncrude Canada Ltd.
WBEA - Staff and Science Advisors



# PROPOSAL

Caribou lichen sampling was conducted at all 25 Forest Health sites along with the WBEA's long-term Monk's Hood lichen program. Ecological observations were recorded at each site on the state of the lichen and the surrounding forest. Laboratory analysis of lichen would be conducted and data analyzed with the goal of understanding the following questions:

- What are the concentrations of nitrogen, sulphur and trace elements in Caribou lichen at Forest Health sites?
- Do these concentrations correlate with measured ambient and deposited concentrations of nitrogen, sulphur and trace elements?
- Do these concentrations correlate with the measured concentration of nitrogen, sulphur and base cations in the soil?
- Do these concentrations correlate with the measured concentrations in Monk's Hood lichen?
- Do any of the concentrations exceed the expected concentrations in Caribou lichen?
- What is the observed state of the lichen at the Forest Health sites? Do they correlate with measurements of deposition?











# FIELD CAMPAIGN

## FIELD TIMING

To align timing with the long-term Monk's Hood lichen program, both Caribou lichen and Monk's Hood lichen were collected from September 9 - 25th, 2024.

## FIELD TEAMS

Members from 8 local Indigenous communities partnered with WBEA staff for the sampling campaign. The participating communities were:

Athabasca Chipewyan First Nation (ACFN)
Conklin Métis
Fort McKay First Nation (FMFN)
Fort McKay Métis (FMMN)
Fort McMurray 468 First Nation (FM468FN)
Lakeland Métis Nation
McMurray Métis
Mikisew Crew First Nation (MCFN)

## SAMPLE COLLECTION

Lichen was collected and transported following the methods outlined in the WBEA 2024 Field Collection of Lichen Samples standard operating procedure (SOP). Both Monk's Hood lichen and Caribou lichen were collected if available at a site. Ecological observations were recorded at each site. A list of questions focused around the lichen, air/odour, and the site/ecosystem were created before the field campaign to guide conversations.

# SAMPLE COLLECTION PROCESS

1. Collect lichen





2. Label & store in cooler with ice



3. Collect site ecological observations

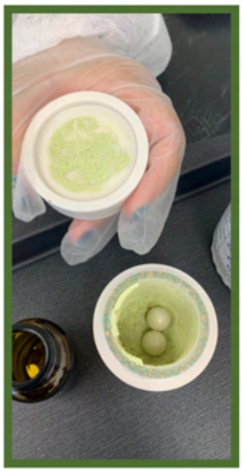


4. Clean lichen of debris



5. Grind lichen





6. Prepare shipment for lab analysis



## WBEA FOREST HEALTH MONITORING SITE AERIAL VIEW



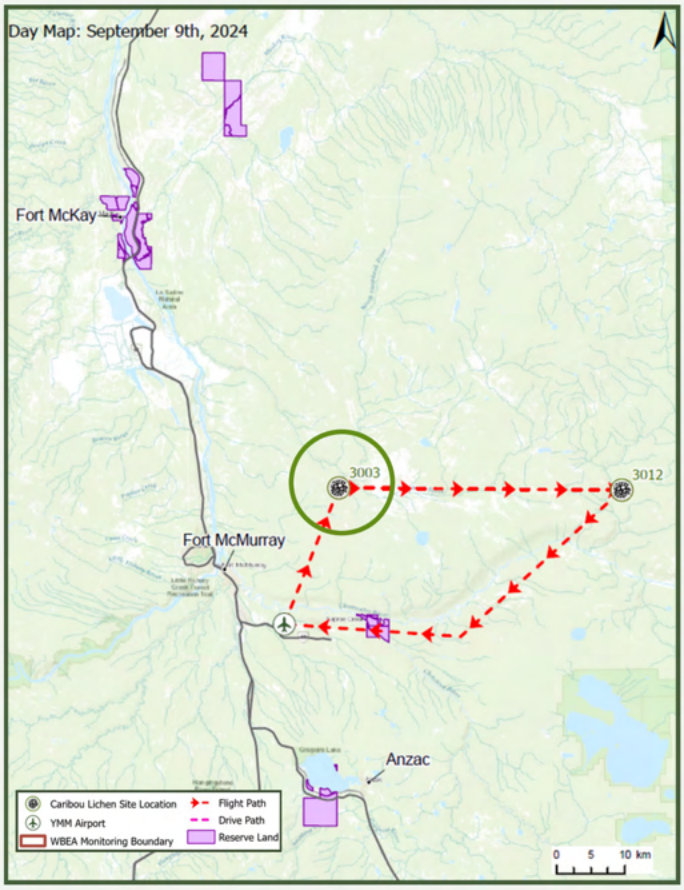
## WBEA FOREST HEALTH MONITORING SITE GROUND VIEW



# DAY 1

# SITE 3003

**Date**: September 9, 2024
**Field Team:** Elder Mae Lacorde (FMMN), Foluke Aina (FMMN), Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 56.83139,-111.10777
**RFMA #:** 1582
**Start Time:** 9:05 MST
**End Time:** 9:53 MST
**Temperature:** 17.5° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - Low
**Texture** - Normal
**Moisture** - Dry



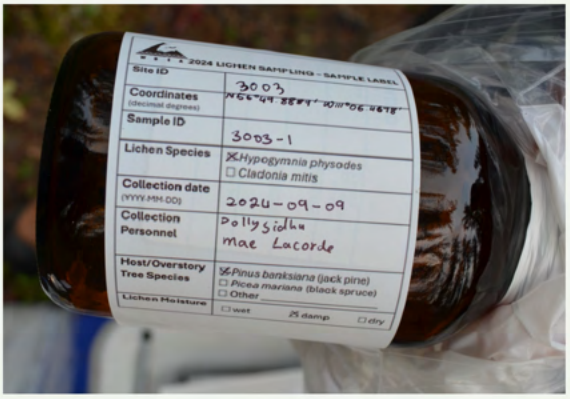
**Monk's Hood Lichen**

**Abundance** - High
**Texture** - Normal
**Moisture** - Damp



## SITE OBSERVATIONS

- Visibly Smoky
- Smelled Smoky
- Leaves changing color
- Older looking stand
- Some brown trees
- Needles on ground
- Shrubs changing color




## WILDLIFE OBSERVATIONS

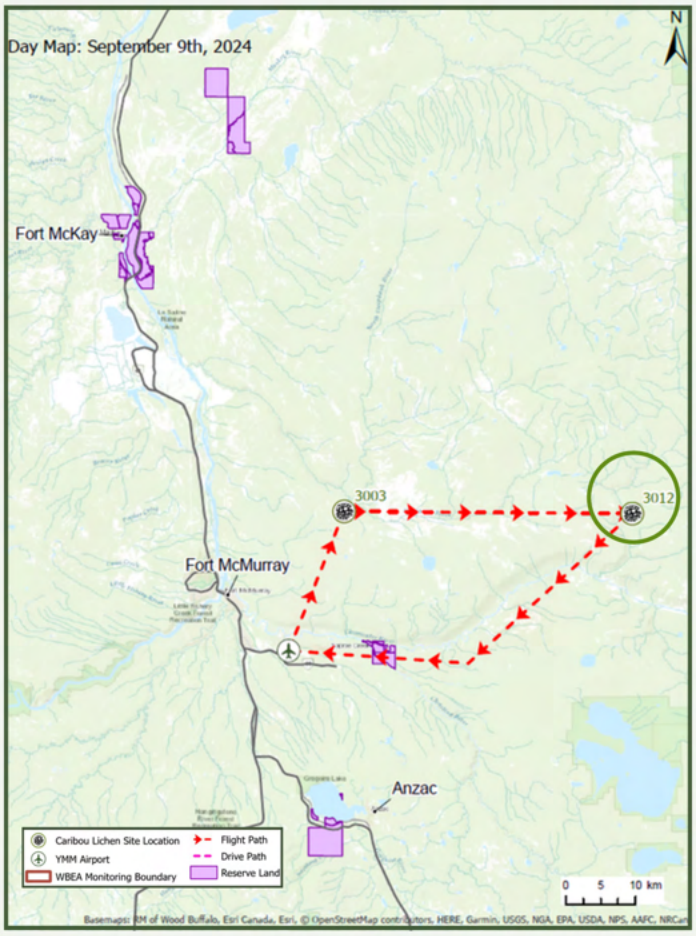
- Ungulate tracks/scat observed
- Bear scat observed
- Signs of foraging found on berries



# DAY 1

# SITE 3012

**Date:** September 9, 2024
**Field Team:** Elder Mae Lacorde (FMMN), Foluke Aina (FMMN), Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 56.82840, -110.42945
**RFMA #:** 1988
**Start Time:** 12:05 MST
**End Time:** 13:05 MST
**Temperature:** 20° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes



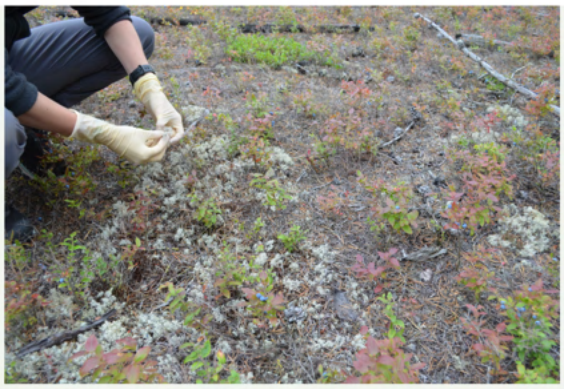





## LICHEN OBSERVATIONS

### Caribou Lichen

**Abundance** - Low
**Texture** - Normal
**Moisture** - Dry



### Monk's Hood Lichen

**Abundance -** Low
**Texture -** Normal
**Moisture -** Damp



### Other

- Elder Mae tried tasting the Caribou lichen to know what it tasted like. She said it was crunchy and tasteless

## SITE OBSERVATIONS

- Visibly smoky
- Smelled smoky/piney
- Bulbous tree observed
- Previous burn site
- Blueberries/cranberries found
- Less canopy coverage
- Elder Mae shared that pine needles can be used for medicinal purposes in treating colds




## WILDLIFE OBSERVATIONS

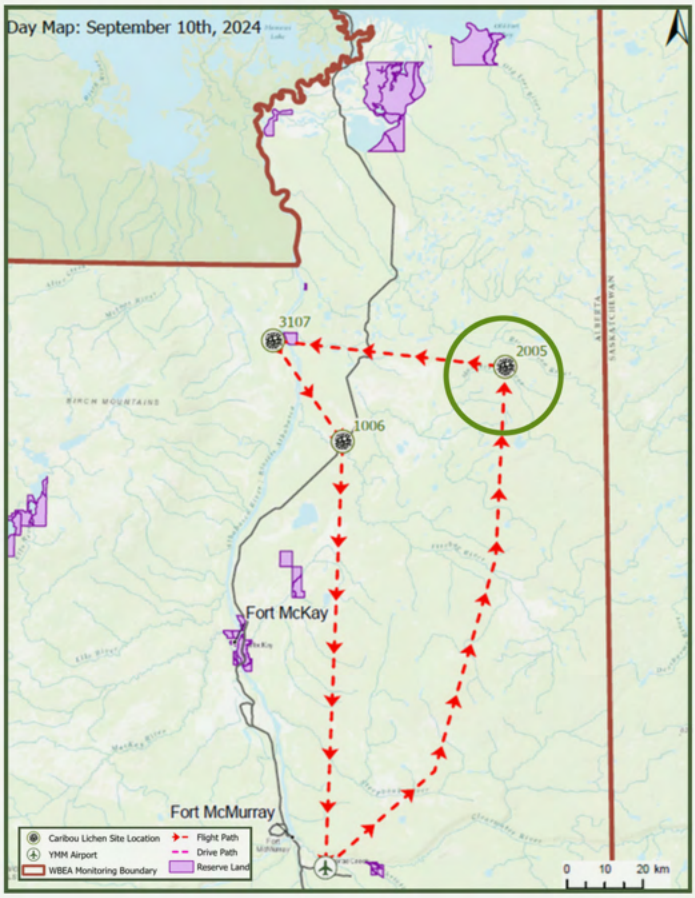
- Signs of foraging noticed in the blueberries
- Grouse pellets were noticed



# DAY 2

# SITE 2005

**Date:** September 10, 2024
**Field Team:** Bethany Whiteknife (MCFN), Elder Lorraine Albert (MCFN), Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 57.83859, -110.45158
**RFMA #:** 2864
**Start Time:** 8:30 MST
**End Time:** 9:10 MST
**Temperature:** 14.6° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes




***Site 3107 was visited but not sampled as the site was burned with no lichen present**





## LICHEN OBSERVATIONS

### Caribou Lichen

**Abundance** - Low
**Texture** - Normal
**Moisture** - Wet



### Monk's Hood Lichen

**Abundance -** Moderate
**Texture -** Normal
**Moisture -** Wet

**Other**

- Abnormal black coloring on some Monks Hood lichen observed in the area. Note made by field team about potentially sick lichen due to discoloration.



## SITE OBSERVATIONS

- The team began with a prayer from Elder Lorraine, giving respect, and stating the intentions for the day
- Each team member put tobacco on the ground as an offering at Elder Lorraine's direction
- Previous burn area
- Lots of blueberries present



## WILDLIFE OBSERVATIONS

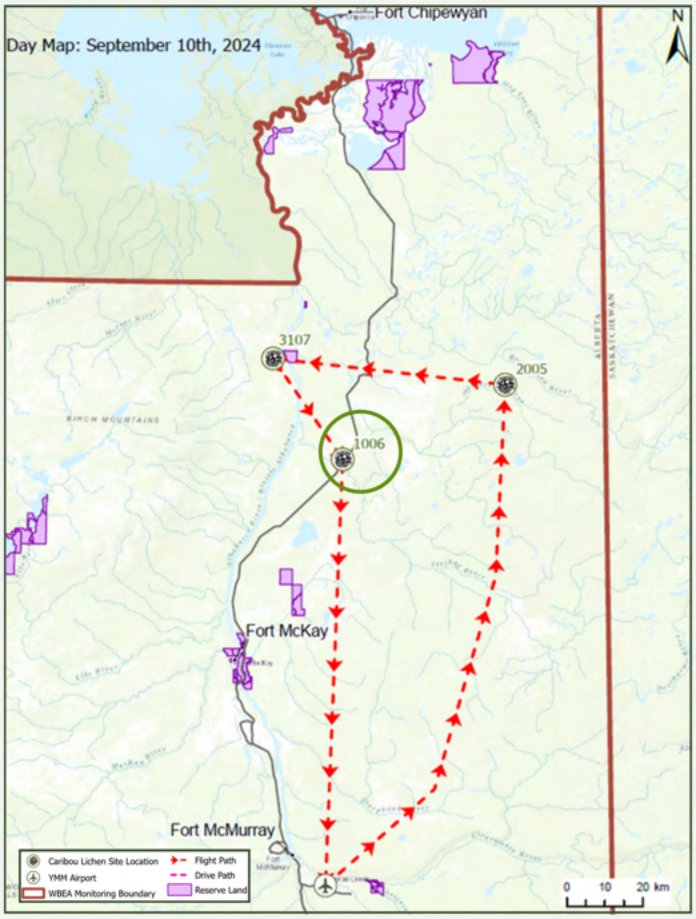
- Frog/Toad seen
- Grouse scat found
- Old bear scat found



# DAY 2

# SITE 1006

**Date:** September 10, 2024
**Field Team:** Bethany Whiteknife (MCFN), Elder Lorraine Albert (MCFN), Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 57.66264, -111.16876
**RFMA #:** 592
**Start Time:** 13:35 MST
**End Time:** 13:55 MST
**Temperature:** 22.5° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

### Caribou Lichen

**Abundance** - Moderate
**Texture** - Appeared very dry
**Moisture** - Very dry

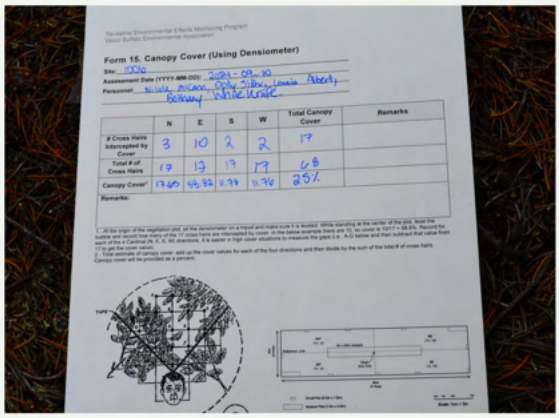
### Monk's Hood Lichen

**Abundance -** Moderate
**Texture -** Appeared very dry
**Moisture -** Very dry

**Other**

- Some Monks Hood lichen appeared dark/brownish






## SITE OBSERVATIONS

- The team began with a prayer from Elder Lorraine, giving respect, and stating the intentions for the day
- Each team member put tobacco on the ground as an offering at Elder Lorraine's direction
- Previous burn areas nearby
- Plane noises and seen overhead prior to sample collection




## WILDLIFE OBSERVATIONS

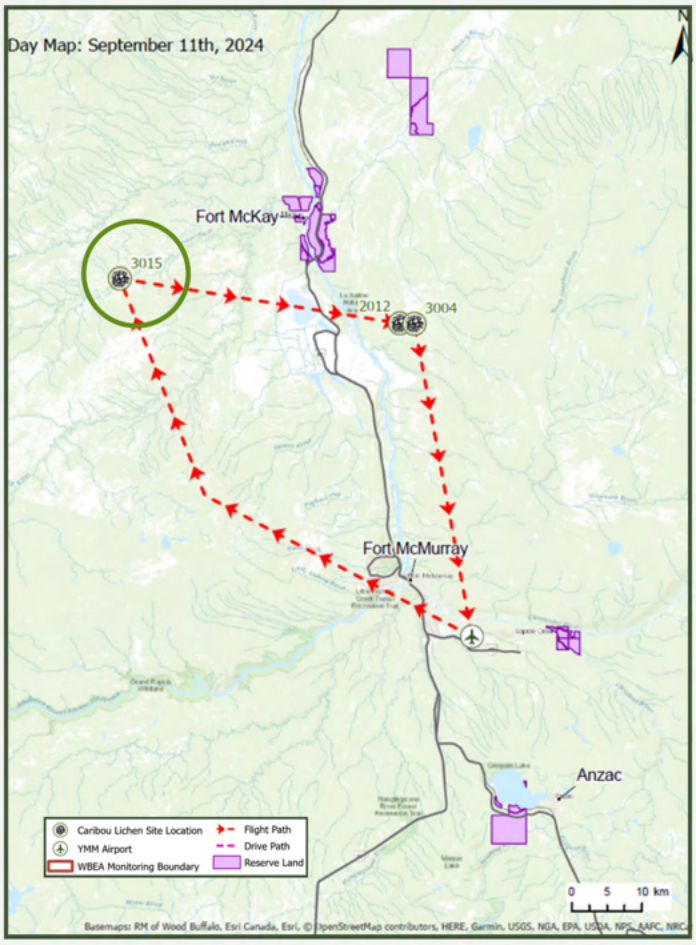
- Ungulate tracks observed
- Grouse scat observed



# DAY 3

# SITE 3015

**Date:** September 11, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 55.62897, -111.170475
**RFMA #:** 772
**Start Time:** 8:45 MST
**End Time:** 9:05 MST
**Temperature:** 7.5° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

### Caribou Lichen

**Abundance** - High
**Texture** - Not recorded
**Moisture** - Damp
**Other**

- Signs of foraging, individuals sampled higher on hill were more dry than those on slope



### Monk's Hood Lichen

**Abundance -** Low
**Texture -** Not recorded
**Moisture -** Dry
**Other**

- Black/Pink color noticed on some individuals, signs of foraging



## SITE OBSERVATIONS

- Mature forest/old growth
- Lots of foliage/shrubs



## WILDLIFE OBSERVATIONS

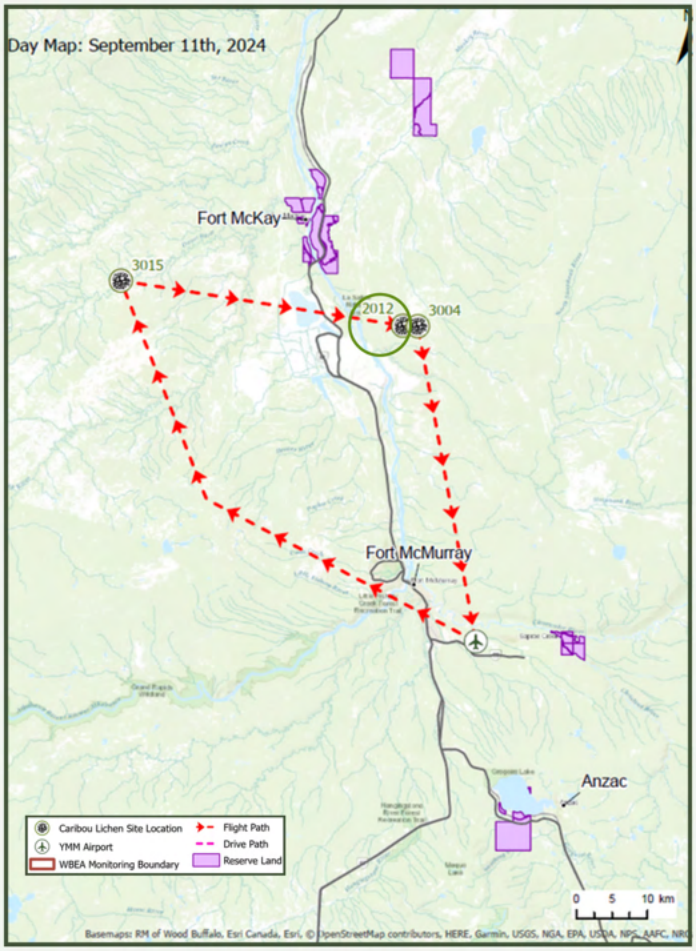
- Lots of signs of wildlife activity (tracks/scat)
- Moose Tracks observed
- Deer tracks observed
- Seen/heard many squirrels
- Heard woodpeckers while sampling
- Canada Jay seen



# DAY 3

# SITE 2012

**Date:** September 11, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 57.05322, -111.37502
**RFMA #:** 2214/3212
**Start Time:** 11:35 MST
**End Time:** 12:40 MST
**Temperature:** 17.7° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Most dry, a few soft
**Moisture** - Dry/dusty
**Other**

- Signs of foraging



**Monk's Hood Lichen**

**Abundance -** Low
**Texture -** Dry/dusty
**Moisture -** Dry
**Other**

- Signs of foraging, pink spots seen on lichen



## SITE OBSERVATIONS

- Industrial odours
- Planes heard overhead
- Industrial/equipment noise
- Dusty



## WILDLIFE OBSERVATIONS

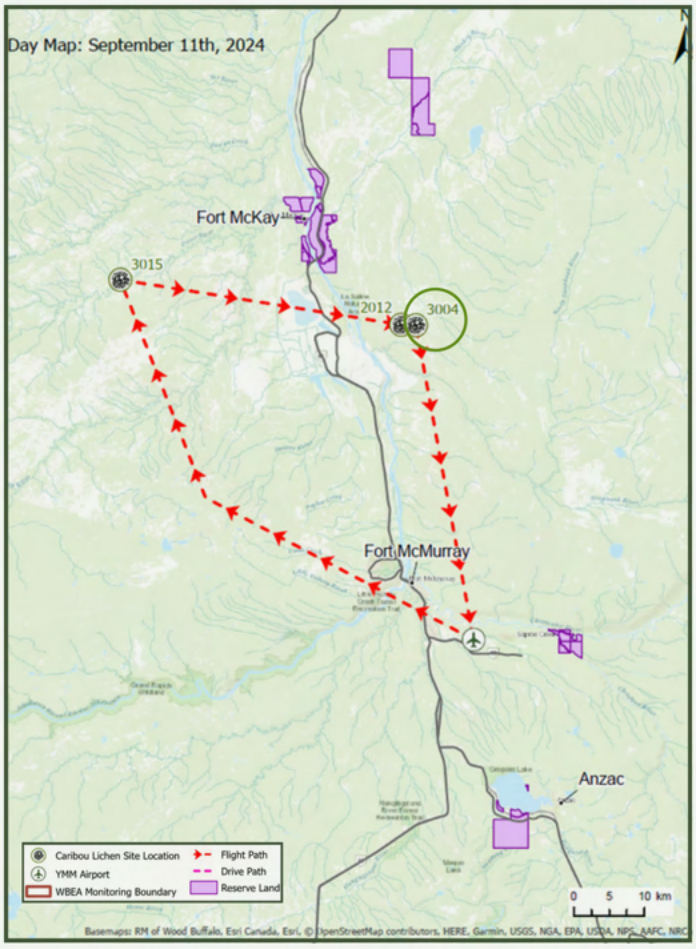
- Squirrels, birds and woodpeckers heard
- Ungulate tracks seen
- Half eaten mushroom found drying on tree
- Digging/foraging noted on ground lichen location



# DAY 3

# SITE 3004

**Date:** September 11, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA)
**Coordinates:** 57.05322, -111.37502
**RFMA #:** 2718/2214
**Start Time:** 13:30 MST
**End Time:** 13:55 MST
**Temperature:** 22.9° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS



**Caribou Lichen**

**Abundance** - High
**Texture** - Hard/dry
**Moisture** - Dry
**Other** - Slightly dusty to touch



**Monk's Hood Lichen**

**Abundance -** Low
**Texture -** Hard/dry
**Moisture -** Dry
**Other -** Black dots/ discoloration noticed on individuals, dust on lichen

## SITE OBSERVATIONS



- Dusty
- Overheard industry sounds
- Some deadfall noted
- Appears to be a normal jack pine stand

## WILDLIFE OBSERVATIONS

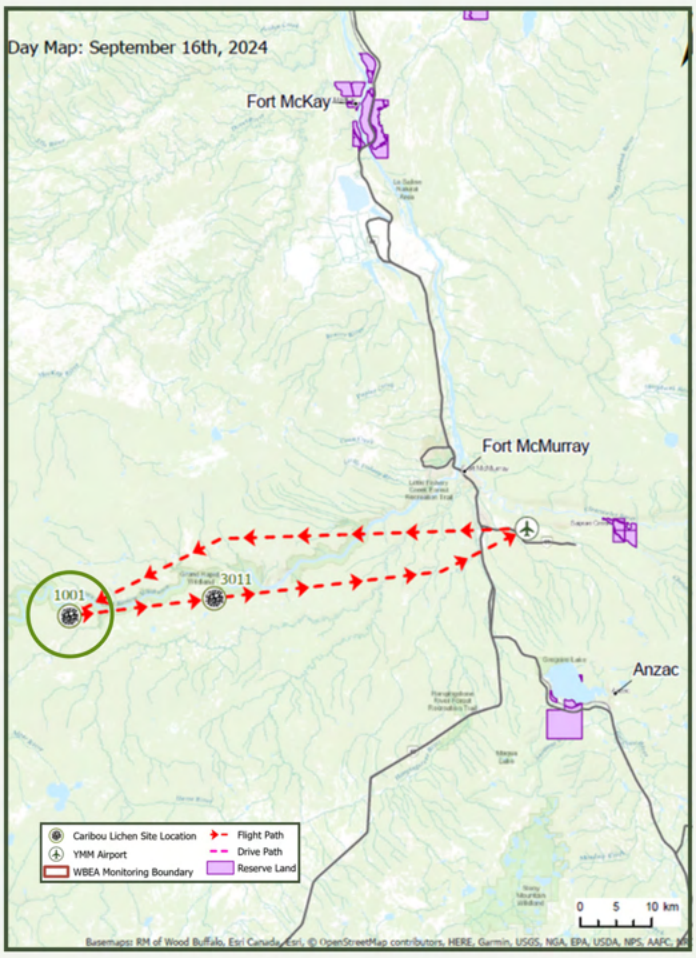


- Squirrels observed
- Bite marks found on nearby mushroom

# DAY 4

# SITE 1001

**Date:** September 16, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Allison Pottie (Hatfield)
**Coordinates:** 56.5395, -112.2756
**RFMA #:** 1696/1826
**Start Time:** 8:18 MST
**End Time:** 9:14 MST
**Temperature:** 15.5° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Soft
**Moisture** - Damp
**Other** - Signs of foraging, pink coloring found on lichen



**Monk's Hood Lichen**

**Abundance -** high
**Texture -** Hard/crunchy, Dusty
**Moisture -** Dry
**Other** - Some were darker in color, possibly unhealthy



## SITE OBSERVATIONS

- Pink coloring found on jack pine needles/caribou lichen



## WILDLIFE OBSERVATIONS

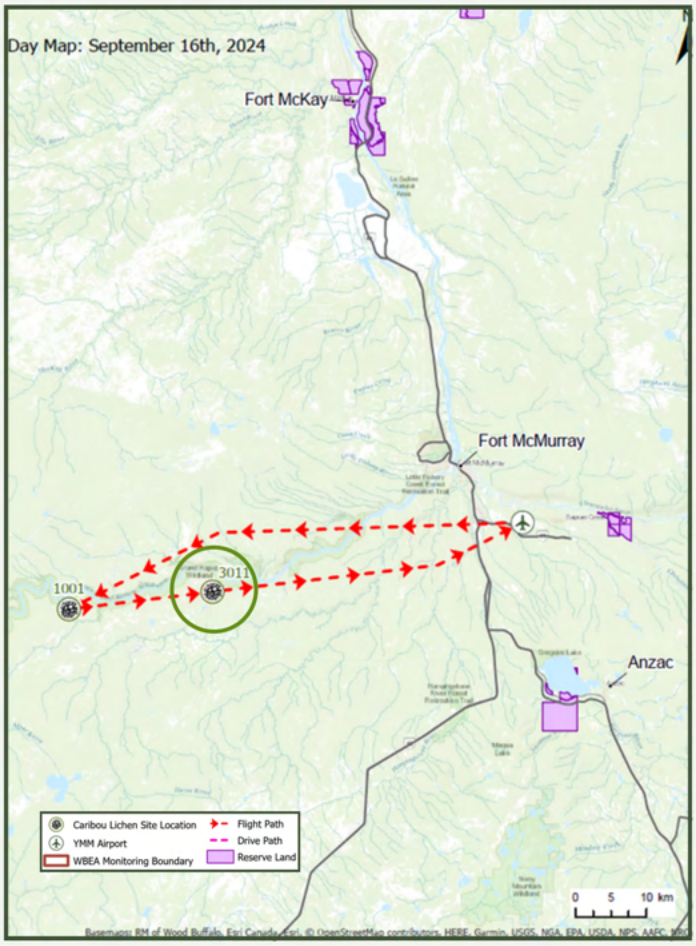
- Wildlife trails through sampling location
- Signs of foraging in caribou lichen
- Heard Squirrels
- Squirrel middens observed



# DAY 4

# SITE 3011

**Date:** September 16, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Allison Pottie (Hatfield)
**Coordinates:** 56.56453, -111.94777
**RFMA #:** 1696/1364
**Start Time:** 12:24 MST
**End Time:** 12:51 MST
**Temperature:** 24.5° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Crunchy
**Moisture** - Dry
**Other** - Signs of foraging



**Monk's Hood Lichen**

**Abundance -** high
**Texture -** Crunchy
**Moisture -** Dry
**Other** - Signs of foraging, some dark spots



## SITE OBSERVATIONS

- Airplane noise after sampling
- Mature stand
- Consistent health among trees



## WILDLIFE OBSERVATIONS

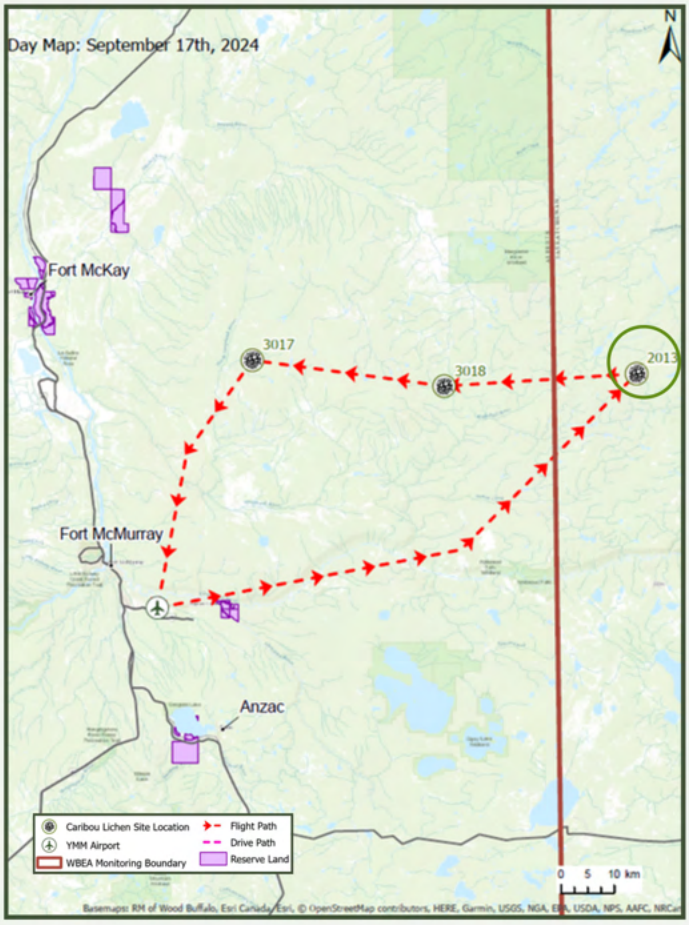
- Ungulate tracks seen
- Grey jay in area
- Squirrel observed
- Wildlife trails through site



# DAY 5

# SITE 2013

**Date:** September 17, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Chantelle Cardinal (McMurray Métis)
**Coordinates:** 57.04727, -109.74966
**RFMA #:** N/A
**Start Time:** 8:27 MST
**End Time:** 8:58 MST
**Temperature:** 14.7° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes







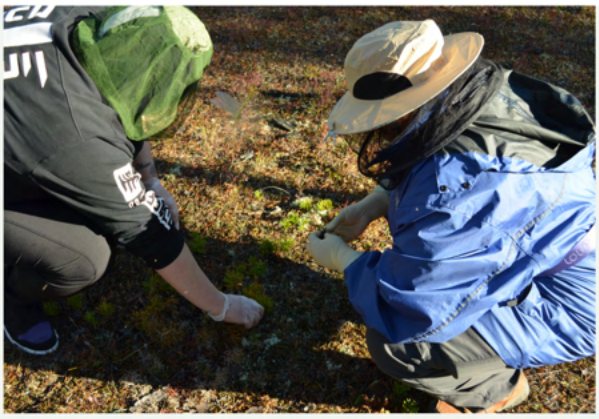

## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - Low
**Texture** - Soft/Spongy
**Moisture** - Damp

**Monk's Hood Lichen**

**Abundance -** Low
**Texture -** Hard/ crunchy
**Moisture -** Dry
**Other** - One tree that was sampled had torn off lichen, possibly foraged or torn by wildlife





## SITE OBSERVATIONS

- A lot of Witches hair lichen which Chantelle noted can be used as fire starter
- A lot of blueberries present, some foraged
- A lot of mushrooms present, some foraged
- Blueberries were found in a tree that was sampled



## WILDLIFE OBSERVATIONS

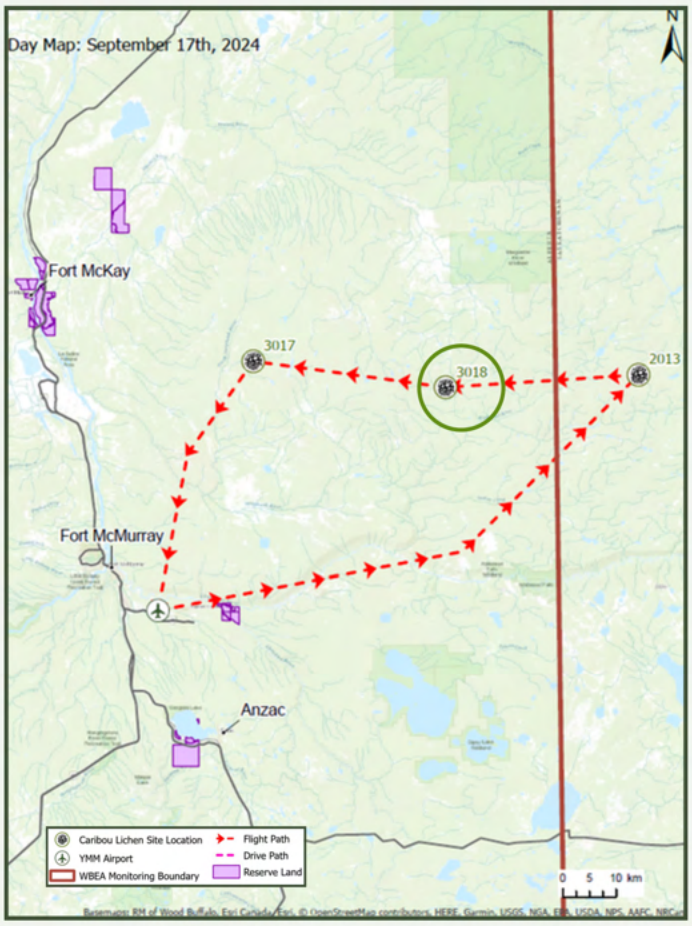
- Ungulate tracks observed
- Burrows seen
- Signs of squirrels
- Various bird calls heard



# DAY 5

# SITE 3018

**Date:** September 17, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Chantelle Cardinal (McMurray Métis)
**Coordinates:** 57.03077, -110.3485
**RFMA #:** 2926
**Start Time:** 11:03 MST
**End Time:** 11:44 MST
**Temperature:** 19.4° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Crunchy
**Moisture** - Dry



**Monk's Hood Lichen**

**Abundance -** Moderate
**Texture -** Crunchy/flaky
**Moisture -** Dry



## SITE OBSERVATIONS

- Mature forest
- Tall trees
- No signs of fire activity
- Lots of blueberries present
- Some cranberries present
- Airplane heard overhead while sampling



## WILDLIFE OBSERVATIONS

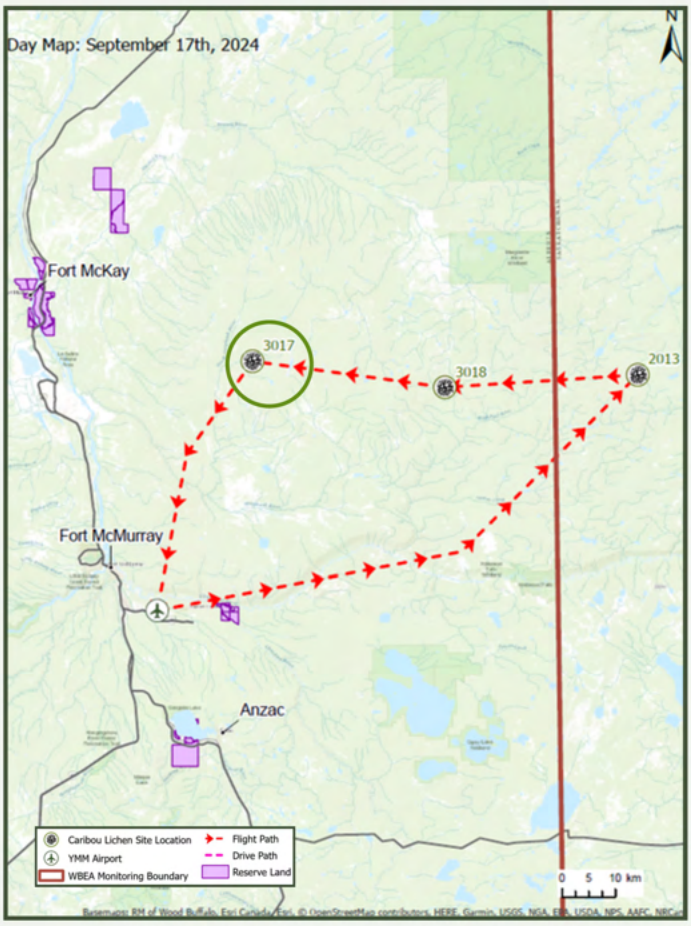
- Flock of geese seen
- Bear scat found
- Grouse/chicken scat found
- Squirrel noises heard
- Various bird noises heard



# DAY 5

# SITE 3017

**Date:** September 17, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Chantelle Cardinal (McMurray Métis)
**Coordinates:** 57.07646, -110.94505
**RFMA #:** 2925
**Start Time:** 13:34 MST
**End Time:** 14:02 MST
**Temperature:** 21.3° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Crunchy
**Moisture** - Dry
**Other** - Signs of foraging



**Monk's Hood Lichen**

**Abundance -** Moderate
**Texture -** Crunchy
**Moisture -** Dry



## SITE OBSERVATIONS

- Plane heard during sampling
- Consistency among stand
- Mushroom found on branch of sampled tree
- Lots of blueberries seen



## WILDLIFE OBSERVATIONS

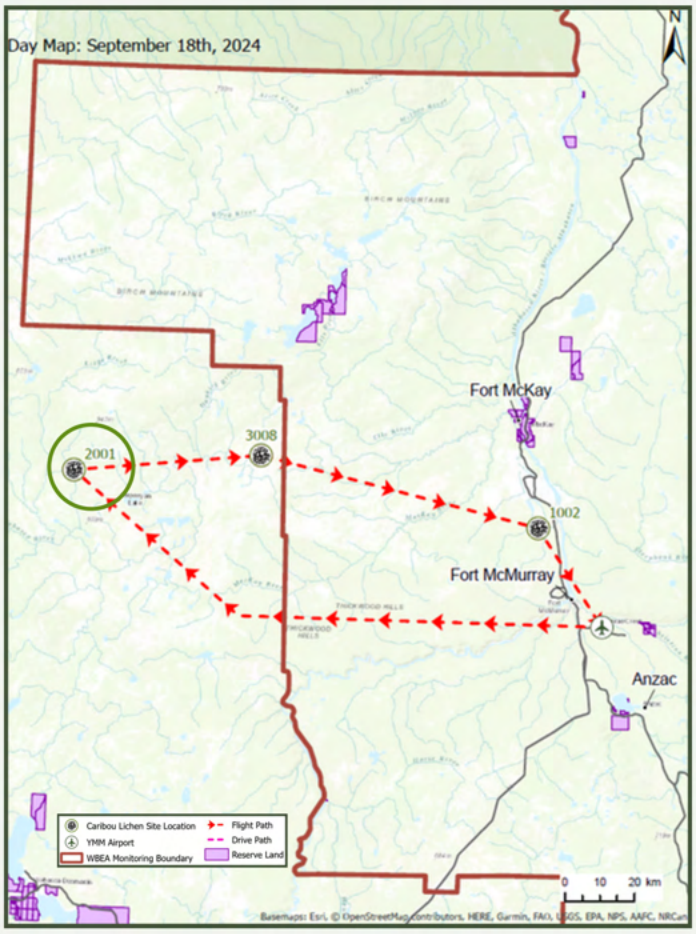
- Bear scat seen
- Clear bear print found on caribou lichen with berries
- burrows seen
- Geese flew overhead while sampling



# DAY 6

# SITE 2001

**Date:** September 18, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Jeremy Cardinal (ACFN), Sabian Voyageur (ACFN)
**Coordinates:** 57.03211, -113.73552
**RFMA #:** N/A
**Start Time:** 15:45 MST
**End Time:** 16:00 MST
**Temperature:** 13.1° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS



**Caribou Lichen**

**Abundance** - Very High
**Texture** - Soft
**Moisture** - Damp
**Other** - found pinkish/red on some lichen



**Monk's Hood Lichen**

**Abundance -** Very High
**Texture -** Soft
**Moisture -** Damp
**Other** - found pink spots on some lichen

## SITE OBSERVATIONS



- Mature Jack pine stand
- Helicopters heard overhead
- Jeremy noted that lichen can be used as a fire starter and that the moss smoke will help keep the bugs away

## WILDLIFE OBSERVATIONS

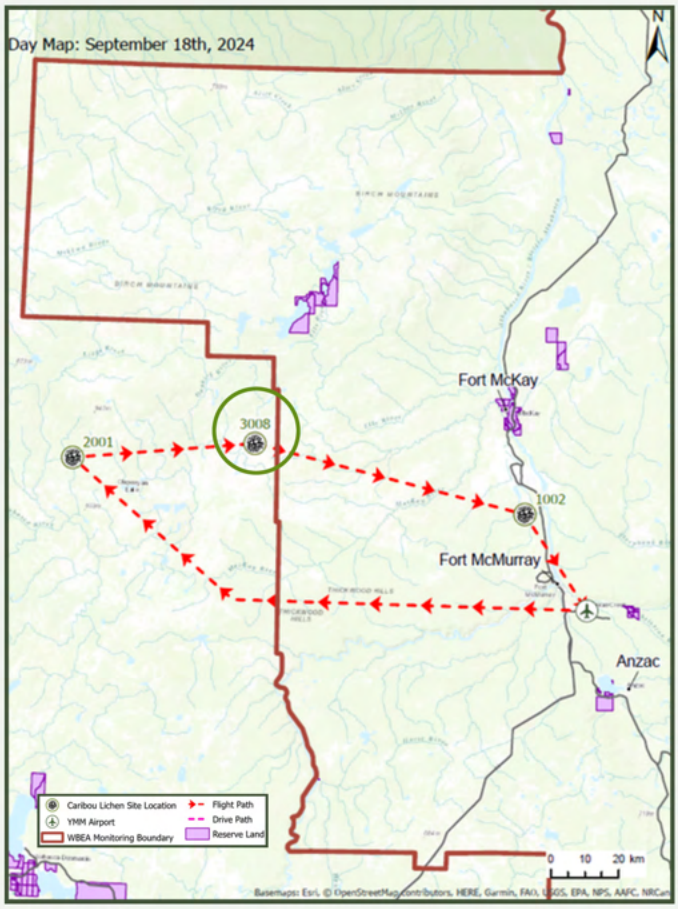


- Jeremy spotted a trail in the water while landing. He noted you can tell its a moose by the way the water was splitting.
- Burrows seen all over site

# DAY 6

# SITE 3008

**Date:** September 18, 2024
**Field Team:** Dolly Sidhu (WBEA), Stephanie Strumberger (WBEA), Jeremy Cardinal (ACFN), Sabian Voyageur (ACFN)
**Coordinates:** 57.08506, -112.85351
**RFMA #:** N/A
**Start Time:** 10:30 MST
**End Time:** 10:37 MST
**Temperature:** 14.2° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes




***Attempted to go to Site 1002, but Sabian spotted a mama bear and 2 cubs foraging so the team didn't land and did not sample site.**





## LICHEN OBSERVATIONS



**Caribou Lichen**

**Abundance** - Moderate
**Texture** - Spongy
**Moisture** - Wet
**Other** - N/A



**Monk's Hood Lichen**

**Abundance -** Moderate
**Texture -** Hard but not crunchy
**Moisture -** Dry
**Other** - N/A

## SITE OBSERVATIONS



- Younger Jack pine stand with consistent tree sizes
- Helicopters heard overhead
- Sabian noted that Caribou lichen can be used as a fire starter.
- Two square wooden boxes found with a screen at the bottom
- Cranberries and blueberries were found at this site.



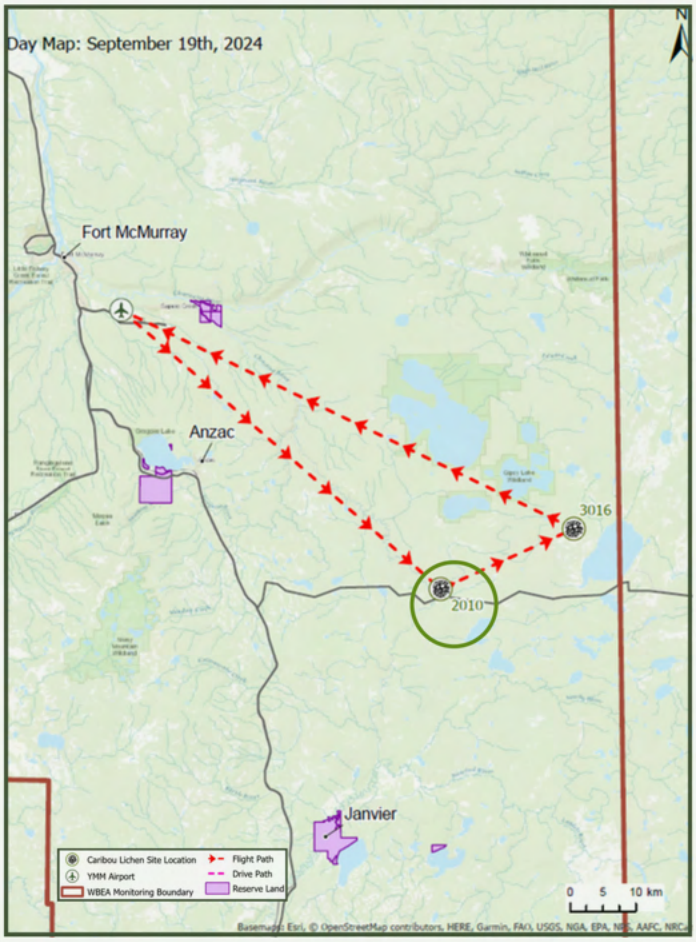
## WILDLIFE OBSERVATIONS

- Jeremy noted a flock of speckled belly birds

# DAY 7

# SITE 2010

**Date:** September 19, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA), Elder James Woodward (FM468FN), William Creedon (FM468FN)
**Coordinates:** 56.2728, -110.44874
**RFMA #:** 1898
**Start Time:** 7:50 MST
**End Time:** 8:25 MST
**Temperature:** 8.2° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - Low
**Texture** - Soft
**Moisture** - Wet

**Monk's Hood Lichen**

**Abundance -** Low
**Texture -** Soft
**Moisture -** Wet
**Other** - Noted many lichen with dark/discolored spots. Elder James questioned why we don't collect dead/unhealthy lichen.*

## SITE OBSERVATIONS

- Team began with prayer from Elder James
- Helicopter noise heard
- Not much for ground foliage
- Possible that a ground fire had went through previously

## WILDLIFE OBSERVATIONS

- Bear scat seen
- Saw and heard squirrels
- William noticed a deer trail through the sample plot
- Elder James identified bobcat tracks near a broken veg plot stake

**WBEA Lichenologist advised that we aim to collect a representative sample of the population at the site. If only a few are abnormal/unhealthy, we try not to collect them as they are not representative of the whole population. Dead/unhealthy lichen do not uptake pollutants the same as healthy lichen so the data is not comparable. At sites where the majority of lichen are dead/unhealthy we would collect.*





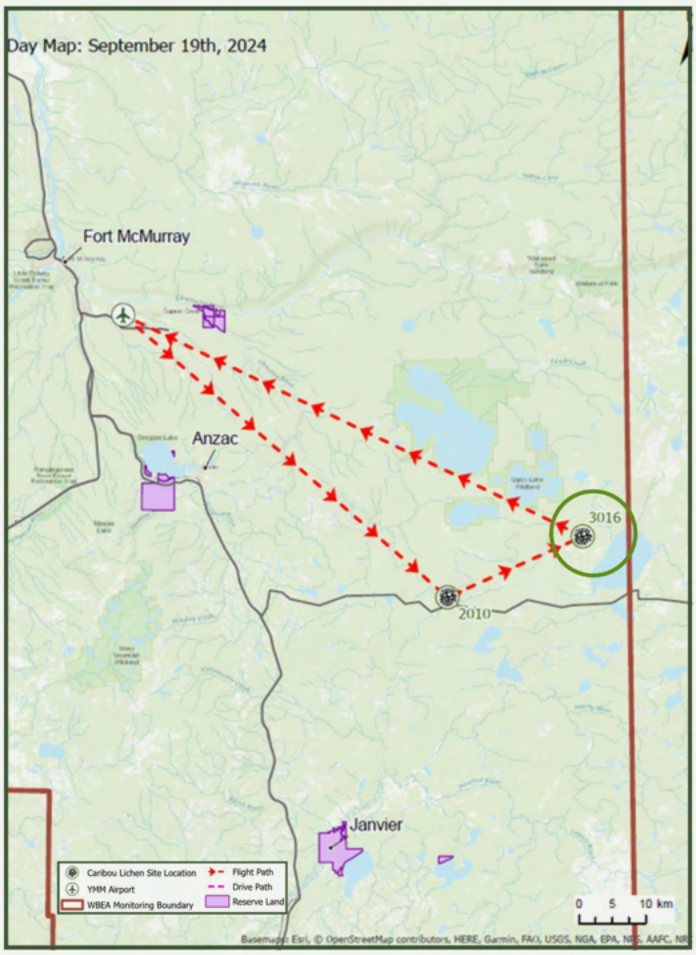




# DAY 7

# SITE 3016

**Date:** September 19, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA), Elder James Woodward (FM468FN), William Creedon (FM468FN)
**Coordinates:** 56.35326, -110.1185
**RFMA #:** 577
**Start Time:** 10:00 MST
**End Time:** 10:30 MST
**Temperature:** 14.4° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes



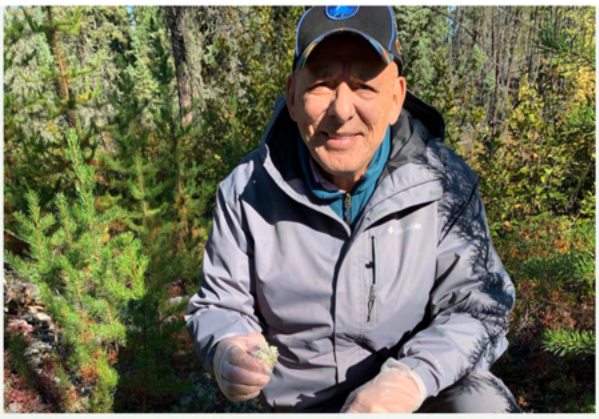





## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - Very Low
**Texture** - Soft
**Moisture** - Damp
**Other** - Signs of foraging



**Monk's Hood Lichen**

**Abundance -** Very Low
**Texture -** Brittle/crunchy
**Moisture -** Dry
**Other** - Mostly black/grey individuals in population



## SITE OBSERVATIONS

- Team began with prayer from Elder James
- Helicopter/plane noises heard
- Not much for ground foliage
- Lots of deadfall
- Deciduous trees present
- New jack pine growth



## WILDLIFE OBSERVATIONS

- William noticed bear tracks in the sand
- Moose tracks were noted

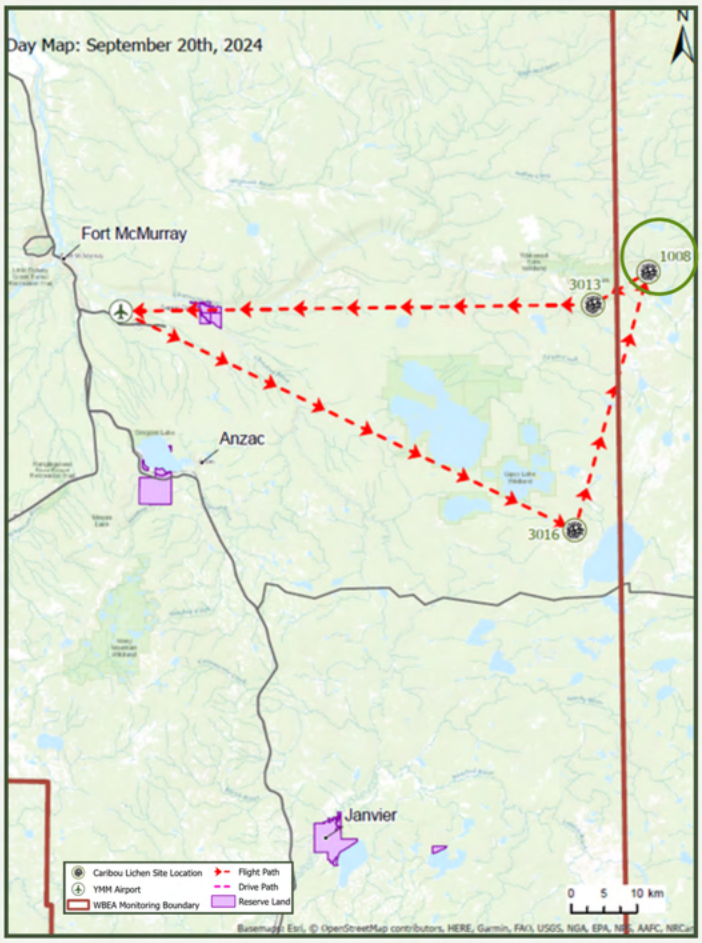


# DAY 8

# SITE 1008

**Date:** September 20, 2024
**Field Team:** Dolly Sidhu (WBEA), Nicole McCann (WBEA), Elder Jerry Quintal (Conklin Métis), Jake Desjarlais (Conklin Métis)
**Coordinates:** 56.70515, -109.92699
**RFMA #:** N/A
**Start Time:** 10:30 MST
**End Time:** 11:05 MST
**Temperature:** 14.4° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes






***Sites 3016 and 3013 were not sampled. Site 3016 was visited for equipment retrieval and site 3013 was burned with no lichen present.**



## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - Moderate

**Texture** - Soft

**Moisture** - Damp

**Other** - Elder Jerry mentioned that caribou lichen /caribou moss can be used for medicinal purposes (tea/cold medicine)

**Monk's Hood Lichen**

**Abundance -** Low

**Texture -** Brittle

**Moisture -** Dry

## SITE OBSERVATIONS

**-** Team began with a prayer from Elder Jerry

- Mature forest
- Lots of ground foliage
- Jake shared a moose call as the team was leaving

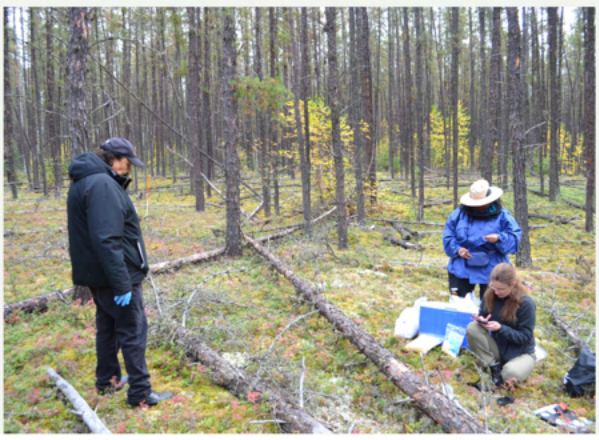
## WILDLIFE OBSERVATIONS

- Bear scat present
- Ungulate scat present
- Wildlife trails through site
- Lots of sand flies present
- Tree scratched up possibly by bear as there were claw marks and one single blueberry on the log





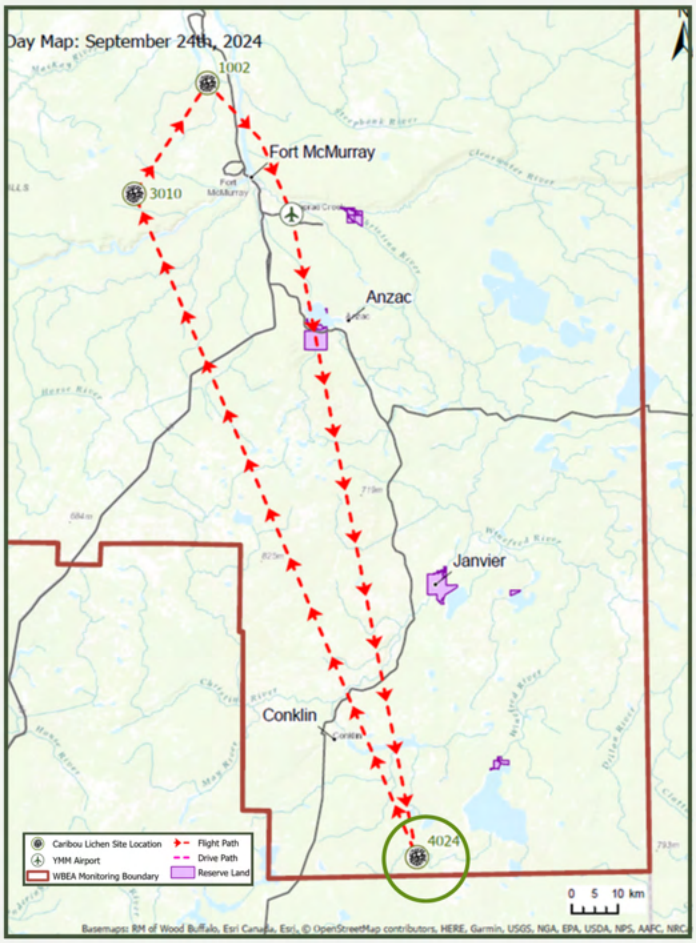




# DAY 9

# SITE 4024

**Date:** September 24, 2024
**Field Team:** Dolly Sidhu (WBEA), Kim Wetten (WBEA), Randy Grandjambe (FMFN)
**Coordinates:** 55.40476, -110.80147
**RFMA #:** 2361
**Start Time:** 10:11 MST
**End Time:** 11:29 MST
**Temperature:** 18.3° C
**Transportation:** Helicopter
**Caribou lichen collected:** Yes








# LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Soft
**Moisture** - Wet
**Other**

- Moose tracks through caribou lichen
- Randy mentioned that he calls it caribou food/ caribou moss and it can be used as a fire starter.
- Randy said he was told the lichen is moving north so you have to go further north to hunt caribou now.
- Randy told a story of when he was younger at his family's cabin, they would use a mixture of moss/ground lichen to make blocks to put between the logs to keep them from rotting





**Monk's Hood Lichen**

**Abundance -** Low
**Texture -** Spongey
**Moisture -** Damp
**Other -** Dark/ discolored spots on some



# SITE OBSERVATIONS

- Randy was surprised how many SAGD operations were seen while flying. He wasn't aware how many there were
- Aircraft heard overhead
- Lots of lichen diversity observed



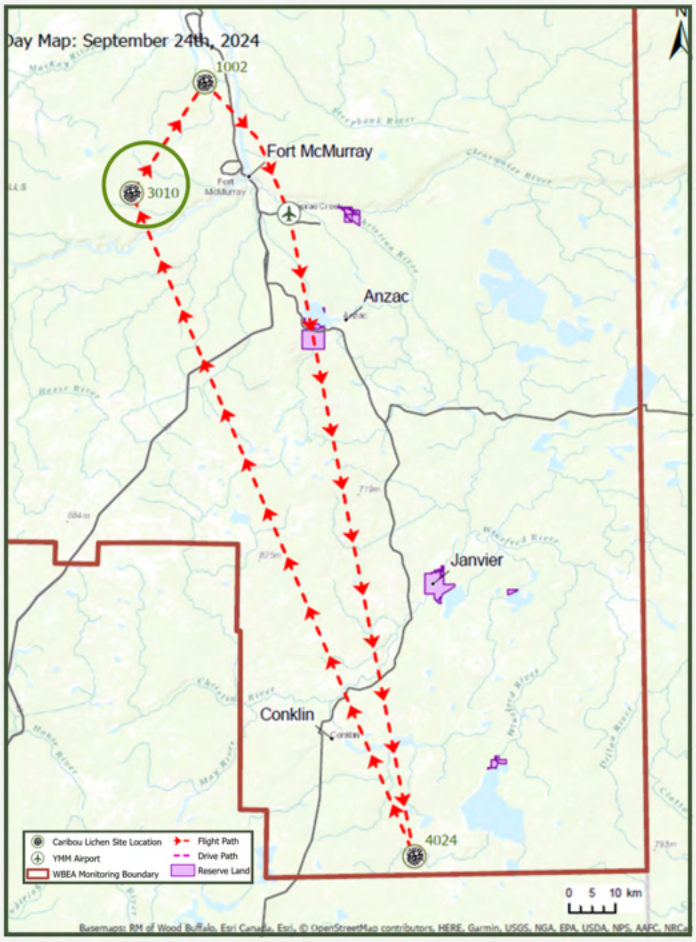
# WILDLIFE OBSERVATIONS

- Wildlife trails on site
- Saw/heard whisky jacks and chickadees
- Moose scat and tracks observed

# DAY 9

# SITE 3010

**Date:** September 24, 2024
**Field Team:** Dolly Sidhu (WBEA), Kim Wetten (WBEA), Randy Grandjambe (FMFN)
**Coordinates:** 56.69259, -111.79514
**RFMA #:** 1364/2753
**Start Time:** 14:30 MST
**End Time:** 14:56 MST
**Temperature:** 20.3° C
**Transportation:** Helicopter
**Caribou lichen collected:** No








# LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - N/A
**Texture** - N/A
**Moisture** - N/A
**Other** - Not sampled as the ground had burned

**Monk's Hood Lichen**

**Abundance -** Moderate
**Texture -** Brittle/ dusty
**Moisture -** Dry
**Other**
**-** dark/ discolored spots on some
- Randy asked why we don't collect the dead/unhealthy lichen.*





# SITE OBSERVATIONS

**-** Previous understory burn
- Lots of deadfall
- Site is not completely within forest/ closer to the edge
- Heard aircraft overhead
- Saw mushrooms drying on a tree branch



# WILDLIFE OBSERVATIONS

- Bear scat seen
- Birds heard
- Moose tracks seen, Randy shared that the 2 indents found behind the moose track indicate that it was a male moose

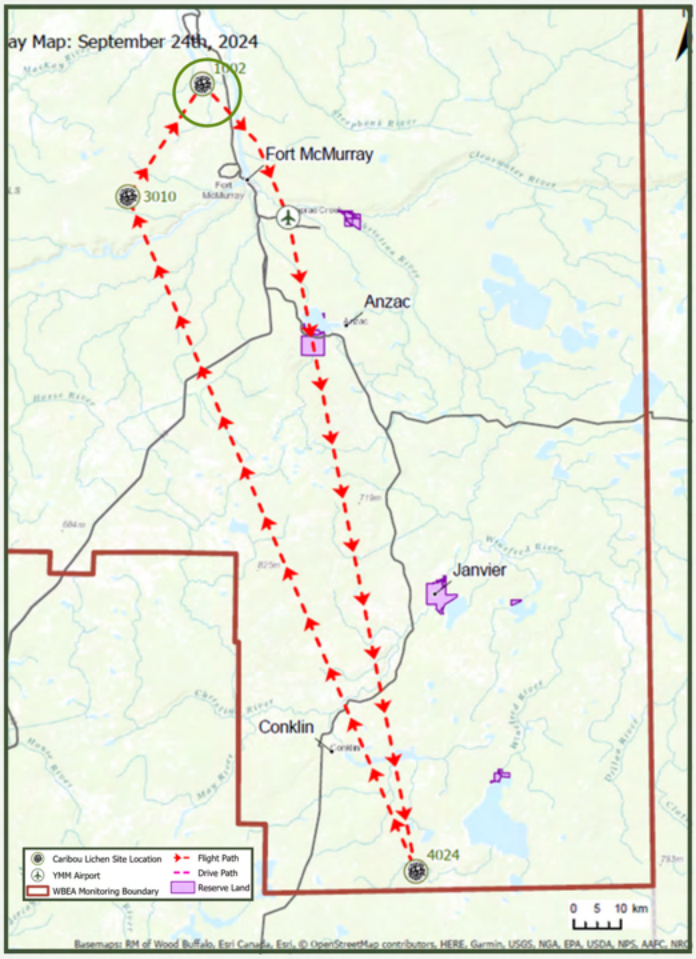


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# DAY 9

# SITE 1002

**Date:** September 24, 2024
**Field Team:** Dolly Sidhu (WBEA), Kim Wetten (WBEA), Randy Grandjambe (FMFN)
**Coordinates:** 56.9096, -111.53962
**RFMA #:** 2156/1790
**Start Time:** 15:45 MST
**End Time:** 16:00 MST
**Temperature:** 20.8° C
**Transportation:** Helicopter
**Caribou lichen collected:** No








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - N/A

**Texture** - N/A

**Moisture** - N/A

**Other** - Not sampled as the ground had burned



**Monk's Hood Lichen**

**Abundance -** Very Low

**Texture -** Crumbly/ dusty

**Moisture -** Dry



## SITE OBSERVATIONS

- Industrial sounds nearby
- Burned understory
- Lots of deadfall




## WILDLIFE OBSERVATIONS

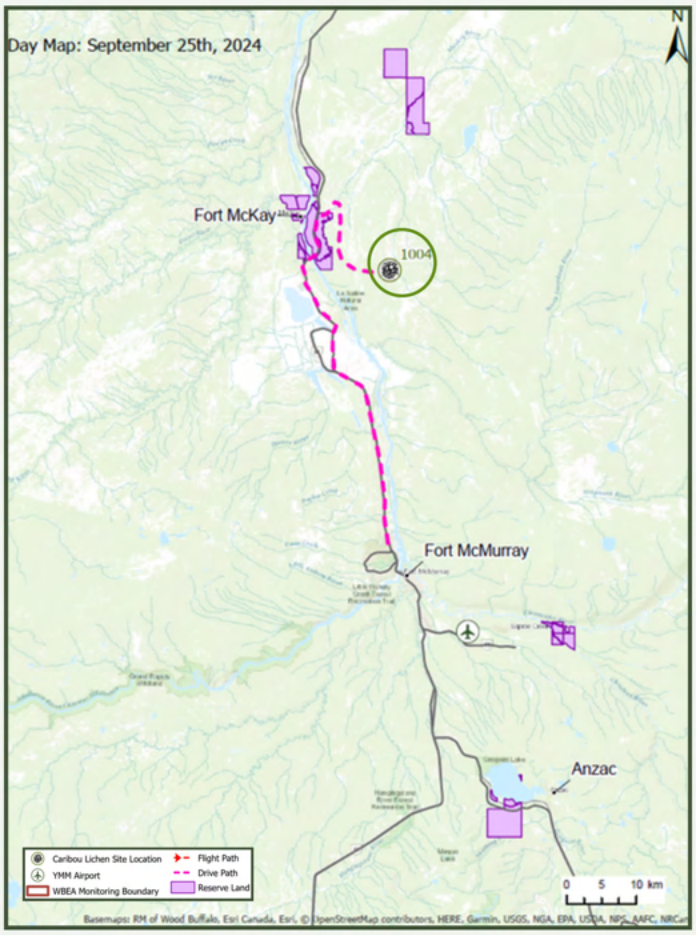
- Bear scat found
- Squirrel midden seen
- Wildlife tracks seen, likely old ungulate tacks



# DAY 10

# SITE 1004

**Date:** September 25, 2024
**Field Team:** Dolly Sidhu (WBEA), Kim Wetten (WBEA), Alyssa Elliott (Lakeland Métis), Chloe Scoville (Lakeland Métis)
**Coordinates:** 57.11901, -111.42542
**RFMA #:** 2718
**Start Time:** 9:51 MST
**End Time:** 11:25 MST
**Temperature:** 15° C
**Transportation:** Truck
**Caribou lichen collected:** Yes








## LICHEN OBSERVATIONS

**Caribou Lichen**

**Abundance** - High
**Texture** - Soft/spongy
**Moisture** - Damp

**Monk's Hood Lichen**

**Abundance -** Very Low
**Texture -** Crumbly/ dusty
**Moisture -** Dry
**Other -** Some with pink spots

## SITE OBSERVATIONS

- Aircraft noise
- Industrial noise close

## WILDLIFE OBSERVATIONS

- Wildlife trail through sample site
- Boreal chickadee heard
- Squirrel midden and trail seen



















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