Colonial land management systems:
Barriers to First Nation community wildfire mitigation in interior British Columbia

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BCWS Meetings
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Overview

- Stswecem'c Xget'tem First Nation

- Our Research Partnership

- Results and Applications

- Addressing Risk: Barriers and Opportunities

Flat Lake Fire from Big Bar Fire Lookout [1]

Stswecem'c Xget'tem First Nation (SXFN)

- Secwépemc Nation

- Two Communities
  - Stswecem'c (Canoe Creek)
  - Xget'tem (Dog Creek)

- Since time immemorial

- Pursuing modern-day Treaty with B.C. and Canada

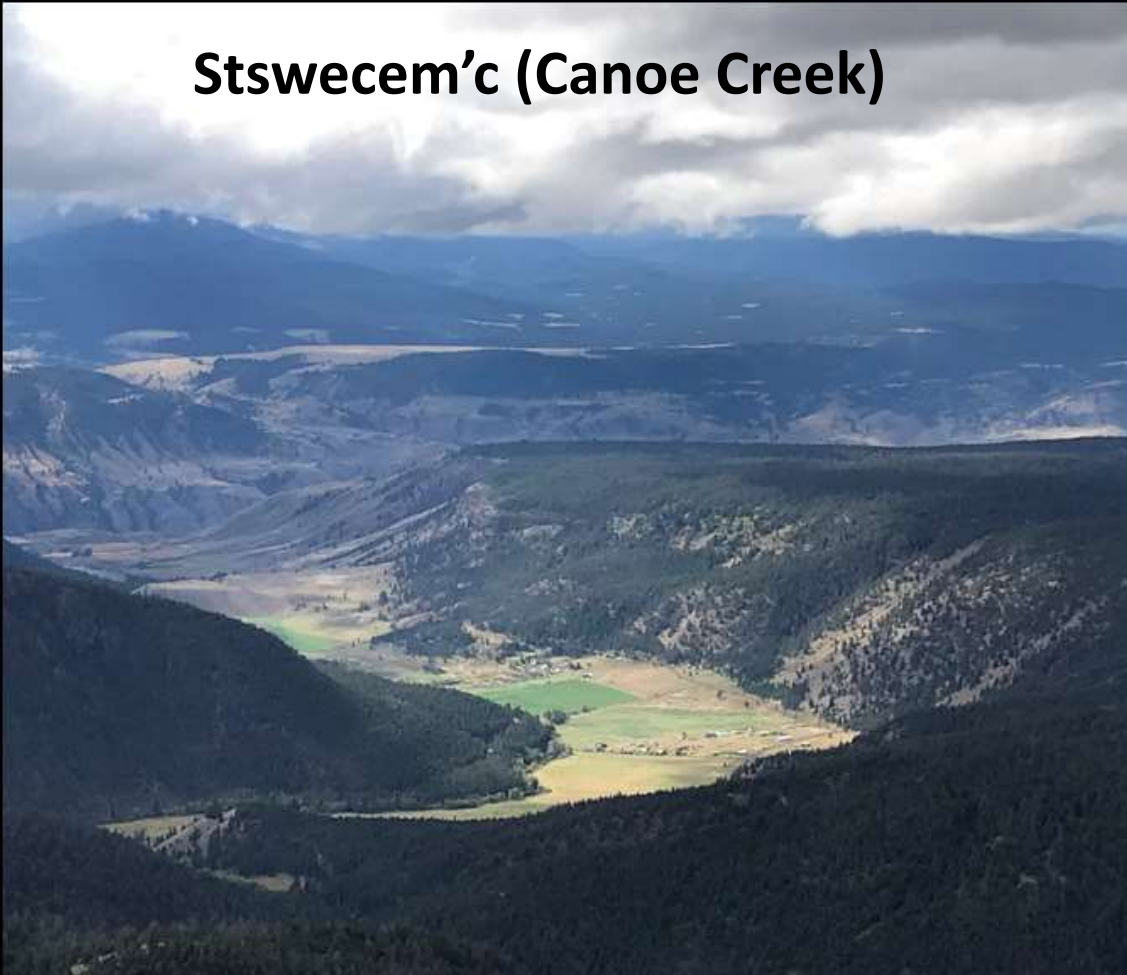- Government-Government Agreements with B.C.
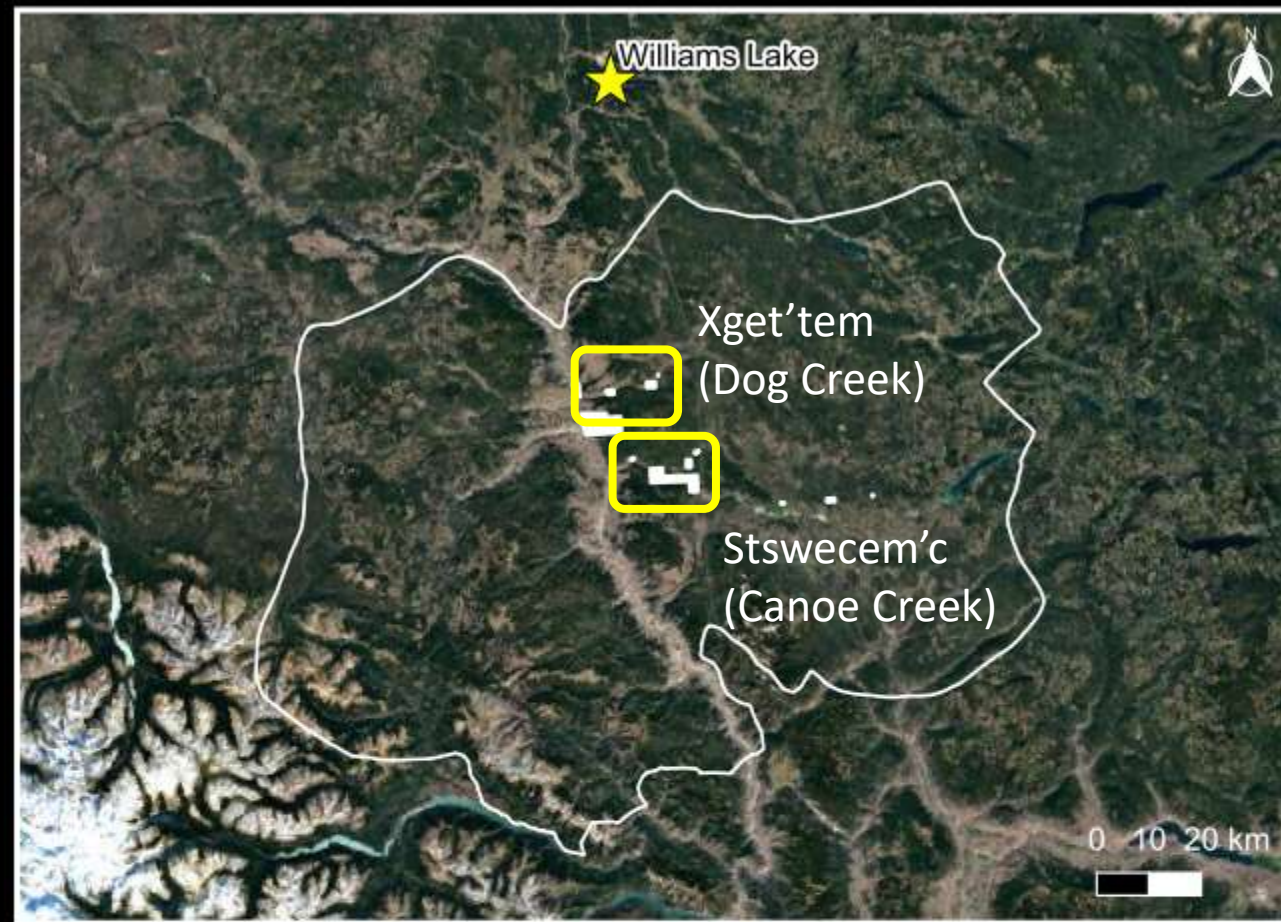
SXFN Traditional Territory

- ☐ SXFN Territory
- ◼ SXFN Reserves

Google Satellite

British Columbia (BC)

Wildfire Risk Surrounding SXFN Communities

Stswecem'c (Canoe Creek)

Xget'tem (Dog Creek)
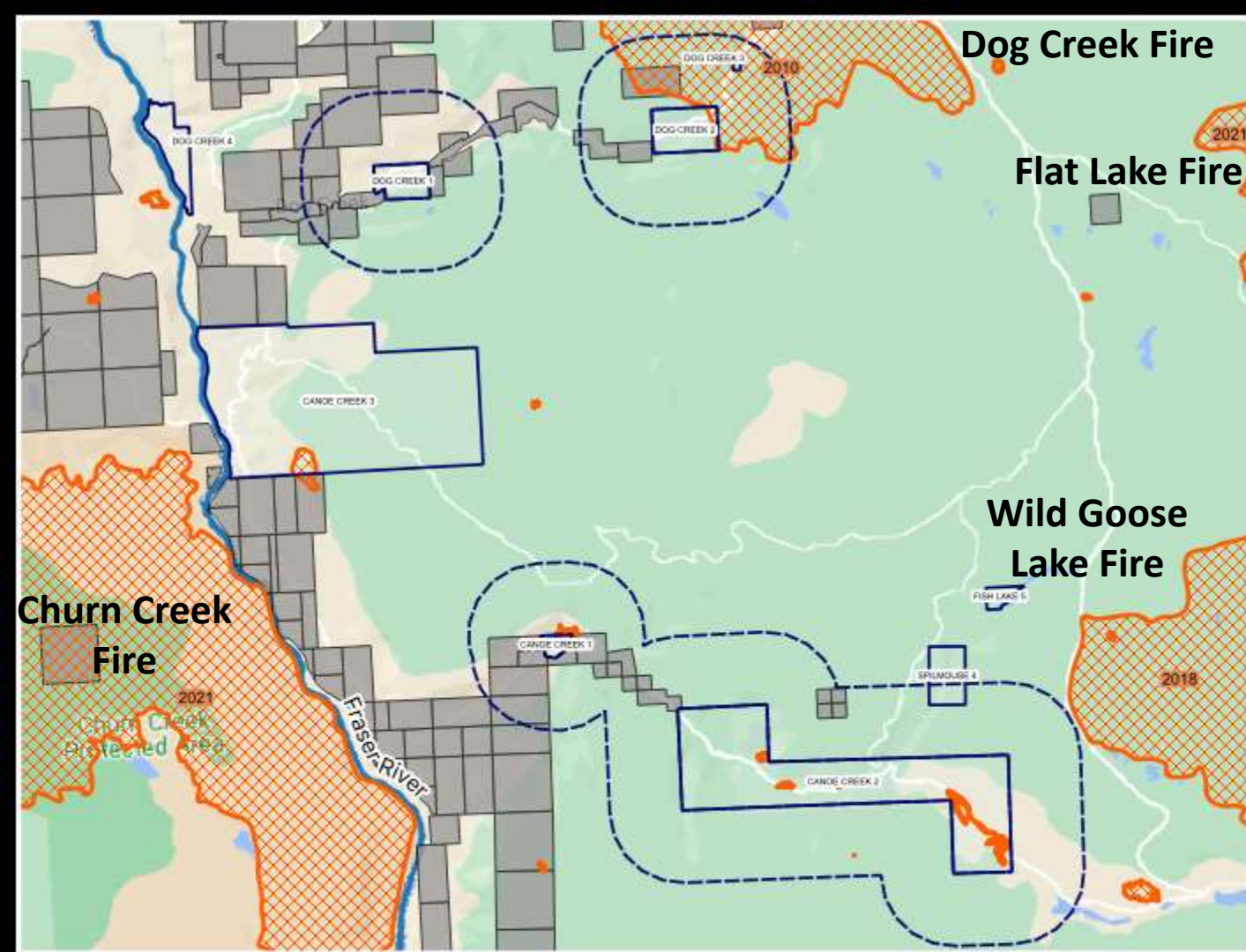
Historical Forest Conditions

- Open, uneven aged Douglas-fir forests

- Maintained by frequent, low intensity fires

- Oral histories, fire scars and tree rings [2,3] indicate cultural burning

Current forest policy does not promote SXFN values

Stswecem'c Xget'tem Wildfire Risk Study Area

Legend:
- SXFN Reserves
- Study Area (2km radius)
- Private Land
- Recent Fire
- 2001 - 2021
- Google Road

0   2.5   5 km

Fire in SXFN Territory

- 2009
  - Kelly Creek Fire (20,925 Ha)

- 2010
  - Dog Creek Fire (7,495 Ha)

- 2017
  - Gustafson Fire (5,700 Ha)
  - Elephant Hill Fire (191,865 Ha)
  - Hanceville Fire (241,160 Ha)

- 2018
  - Wild Goose Lake Fire (6,481 Ha)

- 2021
  - Churn Creek Fire (12,040 Ha)
  - Flat Lake Fire (73,862 Ha)
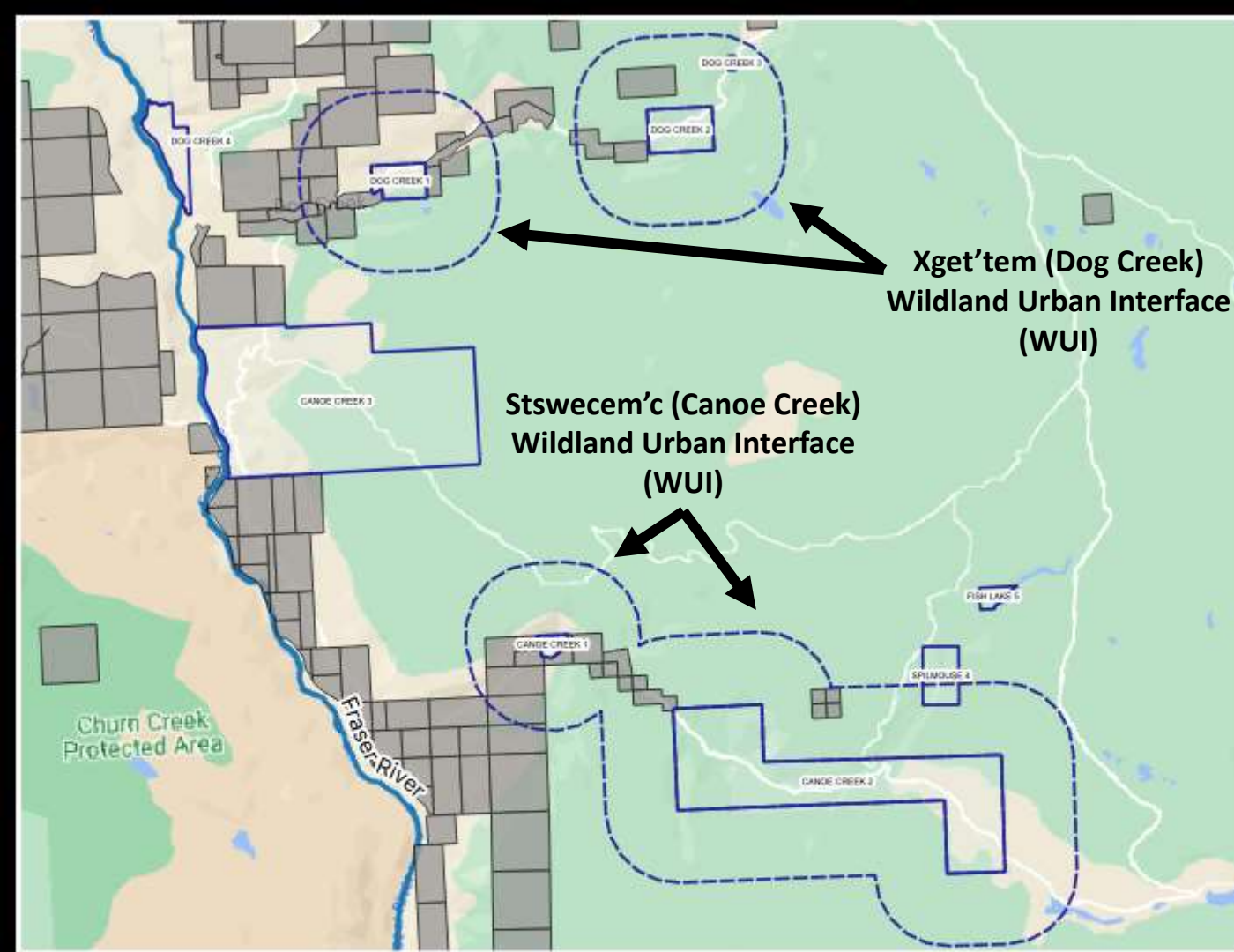 - McKay Creek Fire (44,964 Ha)

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Our research partnership

- Indigenous Collaborative Research Protocol Agreement
  - UNDRIP and OCAP
- SXFN Representative on Research Committee
- SXFN Youth Field Assistant 2022
- Community Engagement
  - Meetings with SXFN Leadership and Stewardship Department employees
  - Days on the land with SXFN staff and community members 2021 & 2022
  - Future 2023 Winter Community Engagement meeting

[1]

Xget'tem (Dog Creek)
Wildland Urban Interface
(WUI)

Stswecem'c (Canoe Creek)
Wildland Urban Interface
(WUI)

Churn Creek
Protected Area

Fraser River

Stswecem'c Xget'tem Wildfire Risk Study Area

SXFN Reserves
Study Area (2km radius)
Private Land
Google Road

0   2.5   5 km

Research Questions

1. How do fuel loads in colonially managed forests within SXFN's WUI contribute to likelihood of crown fire?

2. What colonial policies constrain SXFN's ability to reduce fuels and the likelihood of crown fire in the WUI?

[1]

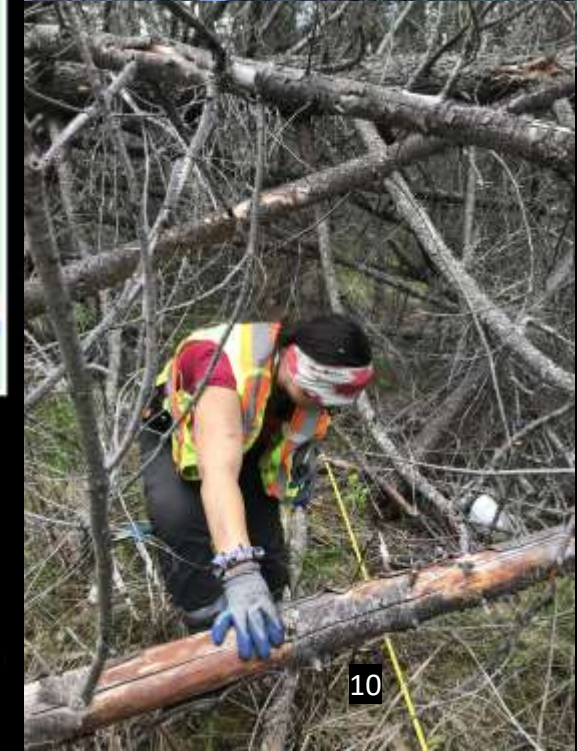## Stswecem'c Xget'tem Wildfire Risk Study Area

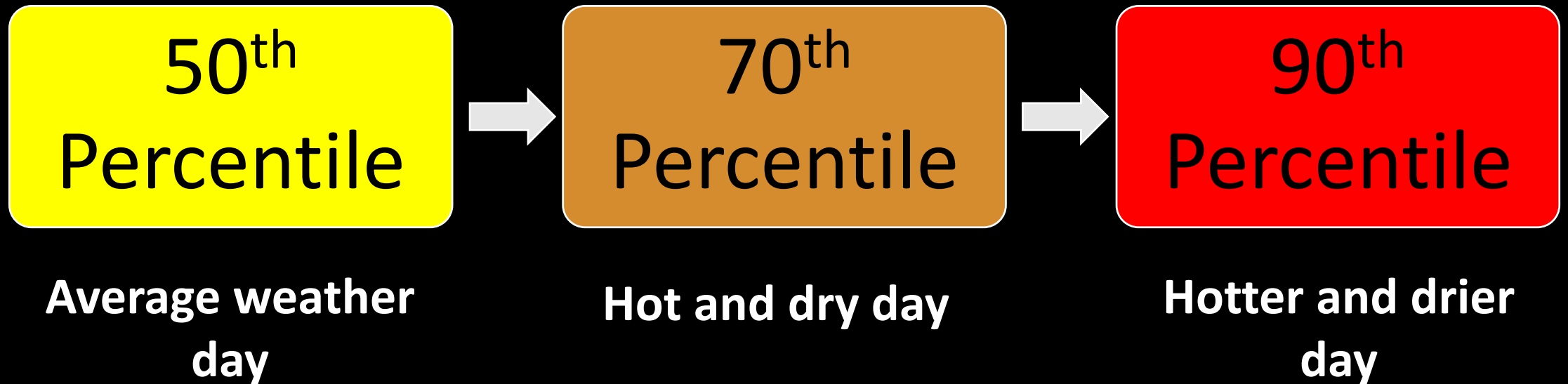| Legend	
SXFN Reserves	Research Focus Area [55% of WUI]
Study Area (2km radius)	Mule Deer Winter Range [37%]
Private Land	Old Growth Management Area [24%]
SXFN Fuels Plots [42]	Google Road

0   2.5   5 km

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Three weather scenarios

- Fire Weather Index (FWI) Percentiles
- Fire Season: May 15 – August 31
- Weather data period: 2007-2021 (15 years)

50th Percentile	→	70th Percentile	→	90th Percentile
Average weather day		**Hot and dry day**		**Hotter and drier day**

Fire Behaviour Predictions by Crown Fire Initiation and Spread Model (CFIS) [4]

Fuel data [42 plots] + Weather data [2007-2021]
=
Crown Fire Likelihood and Fire Behaviour Prediction

BCWS Wildfire Rank [5]

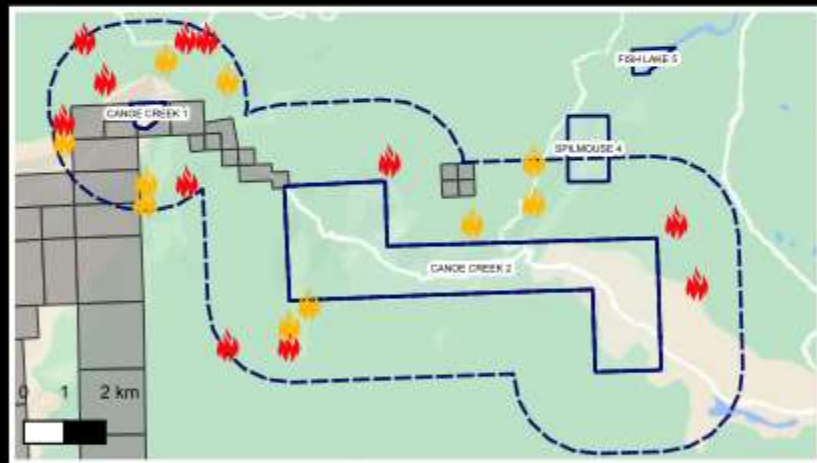RANK 1   RANK 2   RANK 3   RANK 4   RANK 5   RANK 6
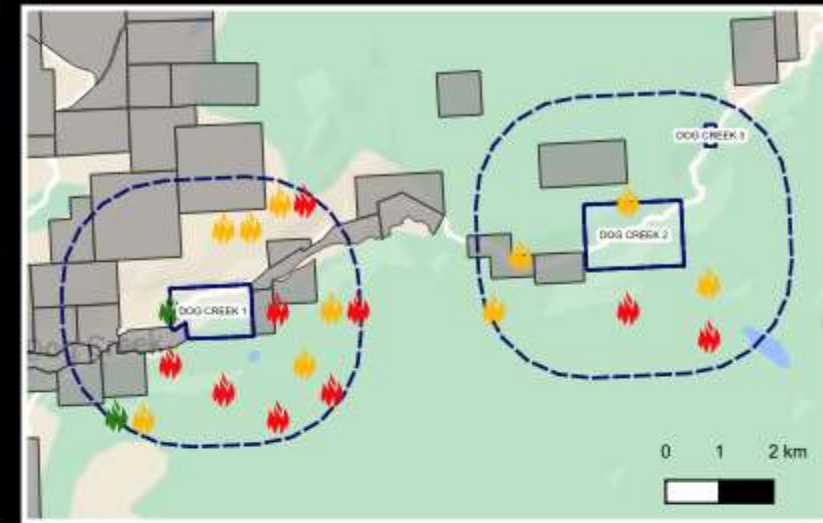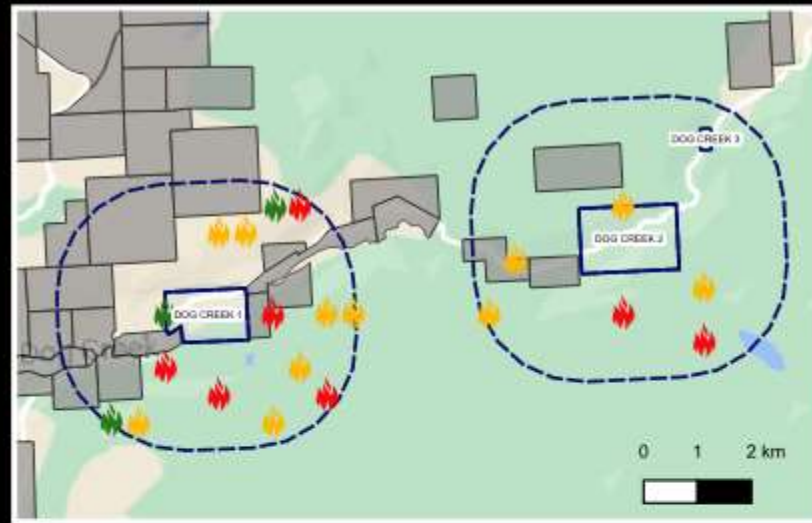
Surface Fire   Passive Crown Fire   Active Crown Fire

50th Percentile

70th Percentile
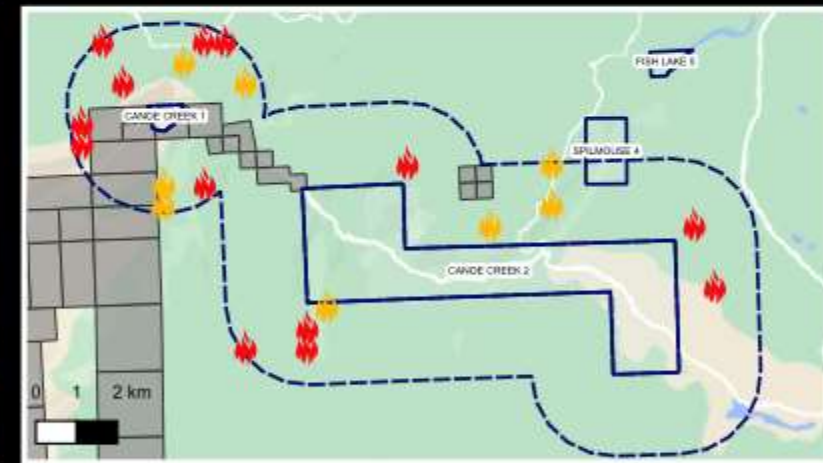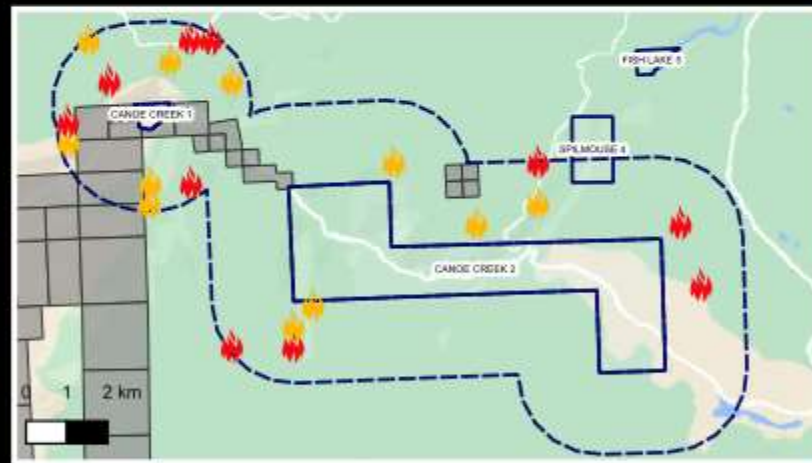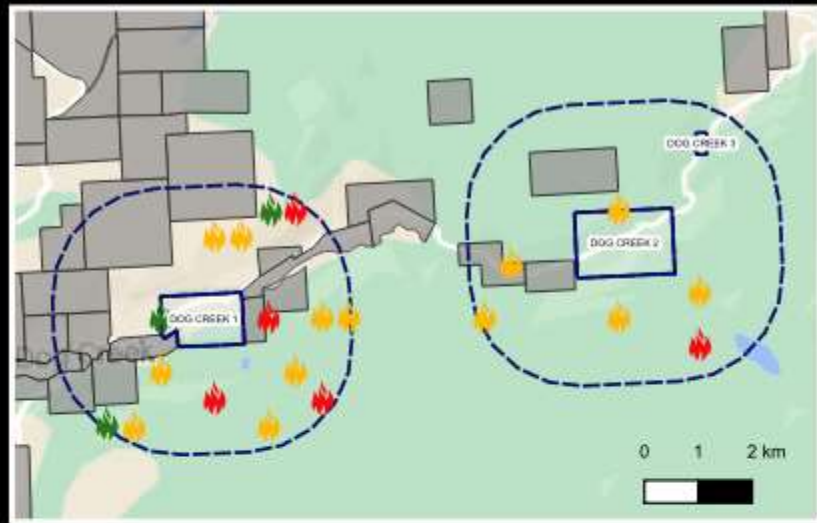
90th Percentile

SXFN Reserves
Study Area (2 km Radius)
Private Land

50th Percentile Predictions
- Active Crown Fire [16]
- Passive Crown Fire [23]
- Surface Fire [3]

70th Percentile Predictions
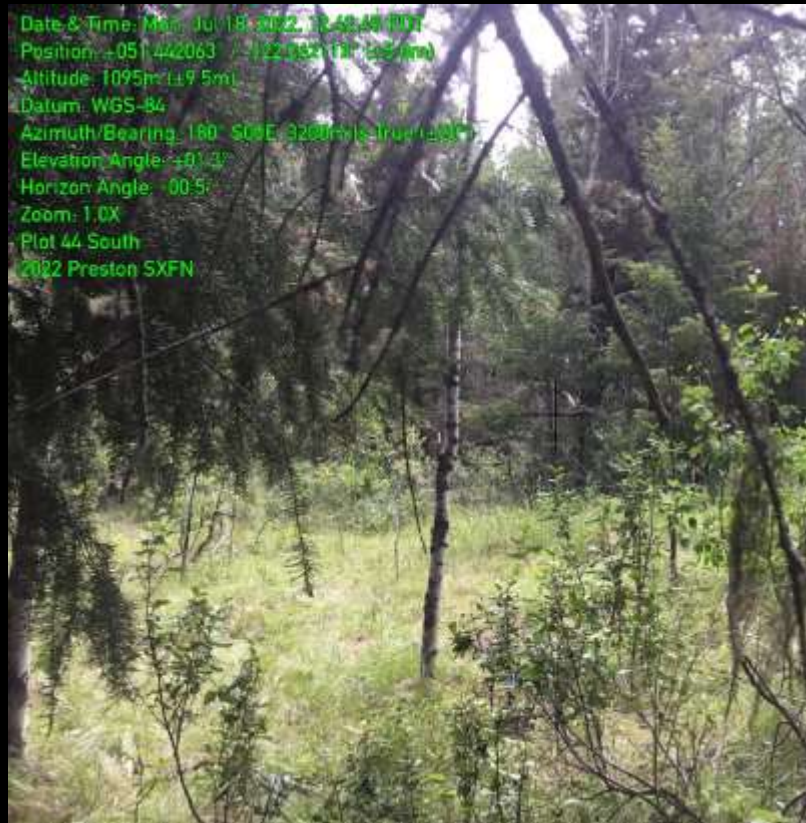- Active Crown Fire [17]
- Passive Crown Fire [22]
- Surface Fire [3]

90th Percentile Predictions
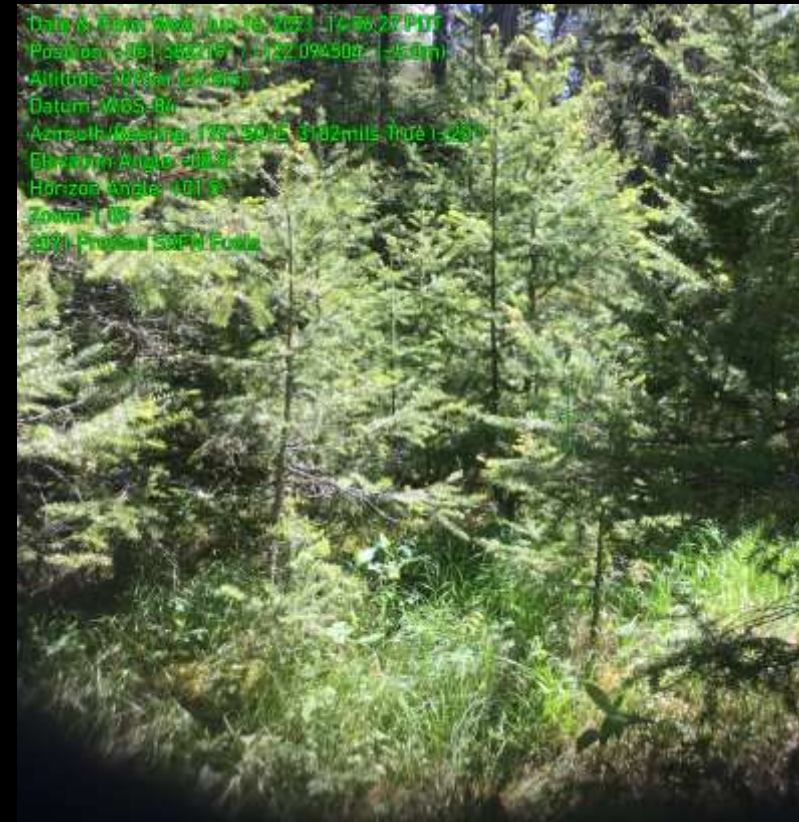- Active Crown Fire [22]
- Passive Crown Fire [18]
- Surface Fire [2]

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Surface Fire 🔥

Passive Crown Fire 🔥

Active Crown Fire 🔥

Not If, When:
Preparing Stswecem'c Xget'tem First Nation for Wildfire

Easier to Implement Adaptations

Strategic Planning
- Evacuation Plan
- Community Wildfire Resilience Plan (CWRP)
- BC government approvals for fuel treatments in the Wildland Urban Interfaces (WUI) "Crown" land

Human & Physical Capital
- Full-time Emergency Coordinator
- Additional firefighting equipment & training
- Small-scale harvesting equipment & operator training
- Improved road conditions

Forest Management
- Landscape level fuel breaks
- Fuel reduction treatments and planting of fire resilient species in the WUI
- Reintroduction of widespread controlled surface fire & integration of traditional values/knowledge
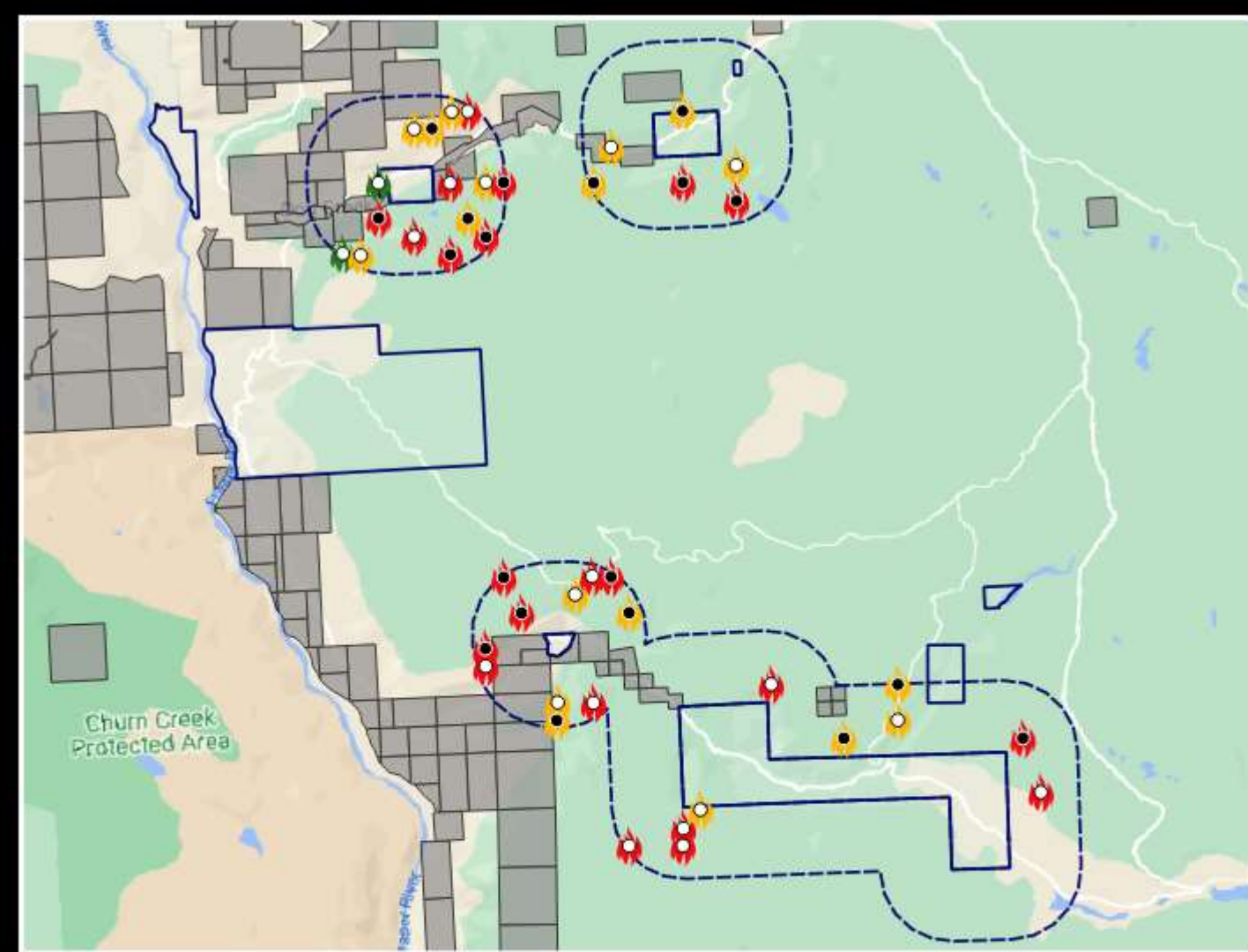
Governance
- Government-to-Government partnership on emergency response & recovery
- Community Forest License that takes in both communities
- "Crown land" restitution
- Treaty

Harder to Implement Adaptations

August 2021 Flat Lake Wildfire [1]

Stswecem'c Xget'tem Traditional Territory

Legend:
- SXFN Reserves
- Study Area (2km radius)
- Private Land
- Mule Deer Winter Range Basal Area Requirements
  - ○ Below Requirements [19]
  - ● Above Requirements [23]
- 90th Percentile Predictions
  - Active Crown Fire [22]
  - Passive Crown Fire [18]
  - Surface Fire [2]
- Google Road

Churn Creek Protected Area

0   2.5   5 km

Barriers to Fuel Reduction

- 19/42 plots not meeting colonial criteria for fuel treatments

  - 11/19 plots predicted active crown fire

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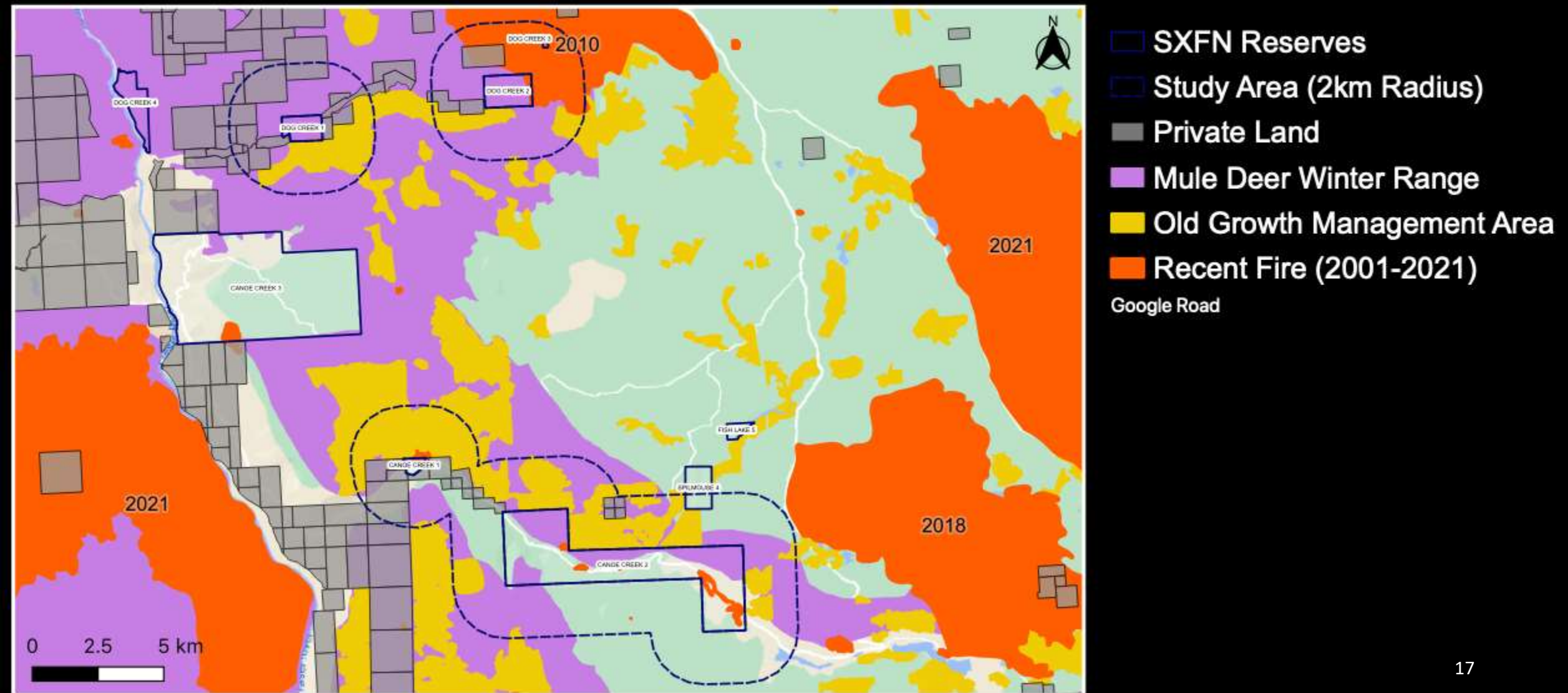# Colonial conservation areas likely to experience crown fire without active forest stewardship

Legend:
- SXFN Reserves
- Study Area (2km Radius)
- Private Land
- Mule Deer Winter Range
- Old Growth Management Area
- Recent Fire (2001-2021)
- Google Road

Addressing Risk: Barriers and Opportunities

Barriers

- Complex colonial management regulations

- Economic constraints
  - Distance to market
  - Bad road conditions
  - High stumpage
  - Competition for funding

- Lack of SXFN forest tenure

Opportunities

- SXFN fuel treatment process road map

- Increasing affordability
  - Local use of biomass
  - Better market for small trees
  - Reduced stumpage for WUIs
  - More funding

- SXFN forest tenure

Addressing Risk: Barriers and Opportunities

Or most importantly,

#LandBack

Fuel treatment process must become faster, easier, and more affordable

Flat Lake Fire from Big Bar Fire Lookout [1]

Thank you

gprest02@mail.ubc.ca

References

- [1] Garsson, J. (2021). photograph.

- [2] Brookes, W., Daniels, L. D., Copes-Gerbitz, K., Baron, J. N., & Carroll, A. L. (2021). A disrupted historical fire regime in central British Columbia. *Frontiers in Ecology and Evolution, 9*(676961). https://doi.org/10.3389/fevo.2021.676961

- [3] Copes-Gerbitz, K., Daniels, L.D., & Hagerman, S.M. (2022). The contribution of Indigenous stewardship to an historical mixed-severity fire regime in British Columbia, Canada. *Ecological Applications, e2736.* https://doi.org/10.1002/eap.2736

- [4] Alexander, M. E., Cruz, M. G., & Lopes, A. M. G. (2006). CFIS: A software tool for simulating crown fire initiation and spread. *Forest Ecology and Management, 234S.* https://doi.org/10.1016/j.foreco.2006.08.174

- [5] BC Wildfire Service. (2022, July 26). *Wildfire rank*. Province of British Columbia. Retrieved October 26, 2022.