# BUILDING SOCIAL-ECOLOGICAL RESILIENCE TO WILDFIRE

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## What is social-ecological resilience?

**Exploring social-ecological resilience requires use of the following related frameworks:**

- Social-ecological systems
- Resilience theory
- "Knowledge integration"

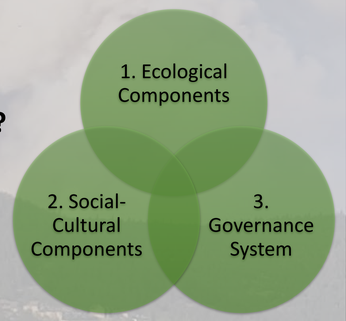
**Building social-ecological resilience requires knowledge of the historical and modern context of the system**

## Three-stage research approach

***Collaborative, community-based, multi-disciplinary***

**Research Questions**

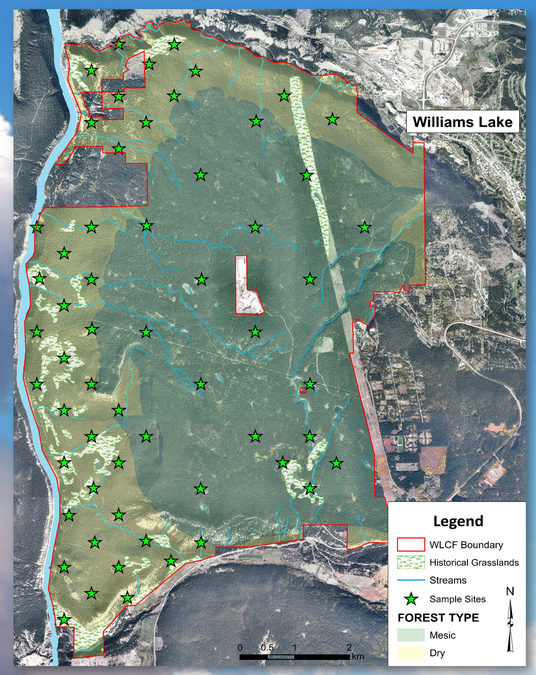
- **What was the social, cultural and ecological role of fire through time?**
- **What social, cultural, political and ecological drivers may have altered this role through time?**




**Objectives & Methods**

1. Determine historical fire frequency and severity through forest demography
   - Forest composition and structure through dendrochronological methods
2. Explore the Indigenous peoples' paradigm regarding wildfire in the region
   - Focus groups and participant observation with key fire knowledge holders
3. Develop profile of changing wildfire governance (policy and practice) in the region
   - Systematic document review and semi-structured interviews with key actors regarding objectives influencing wildfire policy

## The Williams Lake Community Forest




**General Facts**

- Established 2014
- Partners: Williams Lake Indian Band and City of Williams Lake
- Managed for multiple ecological, economic, cultural and social values
- Mandate: community protection from wildfire
- Interior BC: dry, Douglas-fir dominated forests (dry and mesic subzones)

**Ne Sextsine (Flat Rock) Block *(above)***

- 6000 hectares
- Traditional territory of the Williams Lake Indian Band (T'exelc)
- Wildland-urban interface of Williams Lake (adjacent to multiple communities)
- Known archaeological and cultural heritage features
- Historical overwintering home site for T'exelc peoples
- Visible evidence of historical fire *(right)*, particularly in grassland areas

## Forest composition and structure

**At each plot, *n*-tree design used where *n=10* for both canopy and sub-canopy trees**

- 1000 trees total
- 97% Douglas-fir, 2% Spruce, <1% Lodgepole pine
- Two distinct forest types: dry and mesic

**DRY FOREST TYPE**
Average Plot Statistics (n=30)

- Aspect: 247°
- Angle: 14.7°
- Elevation: 614m
- # Stumps: 1.0–1.6
- # Saplings: 1.9
- # Snags: 3.0

**MESIC FOREST TYPE**
Average Plot Statistics (n=20)

- Aspect: 193°
- Angle: 9.7°
- Elevation: 897m
- # Stumps: 4.3–5.6
- # Saplings: 1.6
- # Snags: 2.4

**Average Tree Statistics**

| | | |
|---|---|---|
| *41.7* | *Canopy tree DBH (cm)* | *39.4* |
| 21.2 | Sub-canopy tree DBH (cm) | 20.1 |
| *132* | *Canopy tree density (trees/ha)* | *207* |
| 471 | Sub-canopy tree density (trees/ha) | 356 |

**Site-specific understanding of historical forest demography and fire history is critical for enabling long-term resilience to future wildfires**

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**Background Image: View towards Sugar Cane (Williams Lake Indian Band Reserve) and Miocene fires on July 7, 2017**