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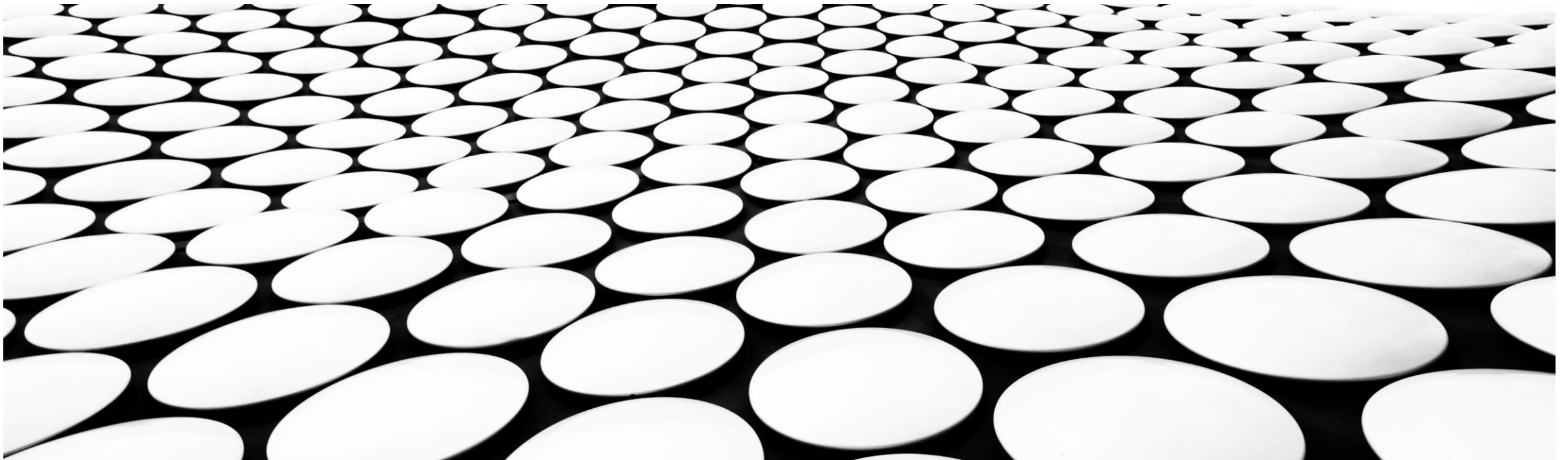
STSWECEM'C XGAT'TEM STEWARDSHIP DEPARTMENT

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# CLIMATE CHANGE AND SENSITIVE HABITAT

EVIDENCE GATHERING FOR PROTECTION OF SPECIES AT RISK & CRITICAL SPECIES AT RISK





STSWECEM'C XGAT'TEM BIO REGIONAL ATLAS  
Protecting sensitive ecological habitat



# Stswecem'c Xgat'tem First Nation **BIOREGIONAL ATLAS**





# Stswecem'c Xgat'tem First Nation

## CHANGES IN MEAN ANNUAL TEMPERATURE 1950 TO 2050

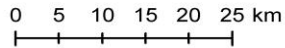
### Bioregional Atlas

- Stswecem'c Xgat'tem First Nation Traditional Territory
- Stswecem'c Xgat'tem First Nation Reserve
- Other First Nation Reserve
- Provincial Park/Protected Area

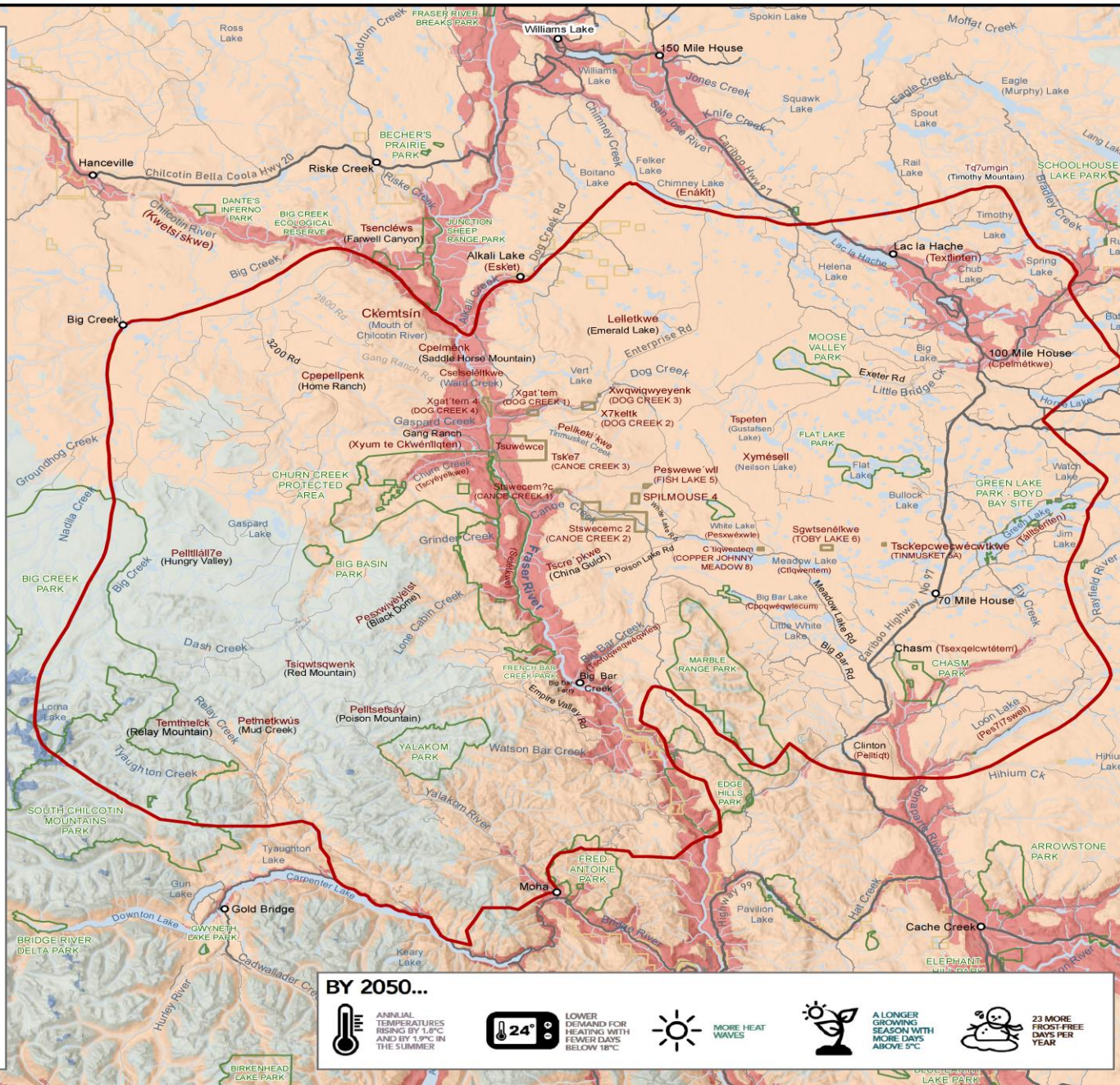
#### Change in Mean Annual Temperature

- 4.4 - 0 °C
- 0 - 3.3 °C
- 3.31 - 6.6 °C
- 6.61 - 10.5 °C

Coordinate System: NAD 1983 UTM Zone 10  
 Map Scale: 1:700,000 (at original size 11" x 17")  
 Created: July 2020 by Inlailawatash  
 Data Sources: Province of British Columbia, Government of Canada, ESRI.



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Rivers within SXFN territory used to freeze completely during the winters, and the citizens would use the thick, frozen surfaces as a bridge to cross back and forth after the fall hunt. The projected temperature change in SXFN territory will not be uniform, and locations throughout the territory will experience different conditions. In the majority of the area, the temperature is predicted to increase by three degrees, while the Fraser Canyon area will experience an estimated six-degree increase. Some of this warming has likely already occurred, as new conditions have been observed from 1950 to 2020. This much warming will have significant impacts on the ecosystems present. One of the most common representations of increased warming in the SXFN territory is forest fires. As conditions get warmer and drier, the risk of fire becomes greater. During some of the driest periods, all fieldwork will be shut down for fear of motorized equipment sending a spark into dry tinder.

With increased temperatures, SXFN could see some new species in its territory, and it could see the loss of some that have lived here traditionally. This could be both good and bad for the land and its people. The tussock moth arrived in 2018 and 2019, and it poses a risk to the nation's Douglas fir forests. It has never been observed this far north before but is a common forest pest in the southern Okanagan region. The northward movement of insect, plant, and wildlife habitat ranges is going to be common, as the species look for a home with their preferred, and sometimes needed, climate conditions. SXFN must think critically about what it can do to adapt and prepare for a warmer territory in the future. As previously stated, it is important that our community is resilient and prepared to deal with the expected and unexpected results of climate change.

#### BY 2050...



ANNUAL TEMPERATURES RISING BY 1.8°C AND BY 1.9°C IN THE SUMMER



LOWER DEMAND FOR HEATING WITH FEWER DAYS BELOW 18°C



MORE HEAT WAVES



A LONGER GROWING SEASON WITH MORE DAYS ABOVE 5°C



23 MORE FROST-FREE DAYS PER YEAR



# Stswecem'c Xgat'tem First Nation

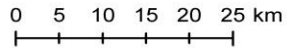
## CHANGES IN MEAN ANNUAL PRECIPITATION 1950 TO 2050 Bioregional Atlas

- Stswecem'c Xgat'tem First Nation
- Stswecem'c Xgat'tem First Nation Reserve
- Other First Nation Reserve
- Provincial Park/Protected Area

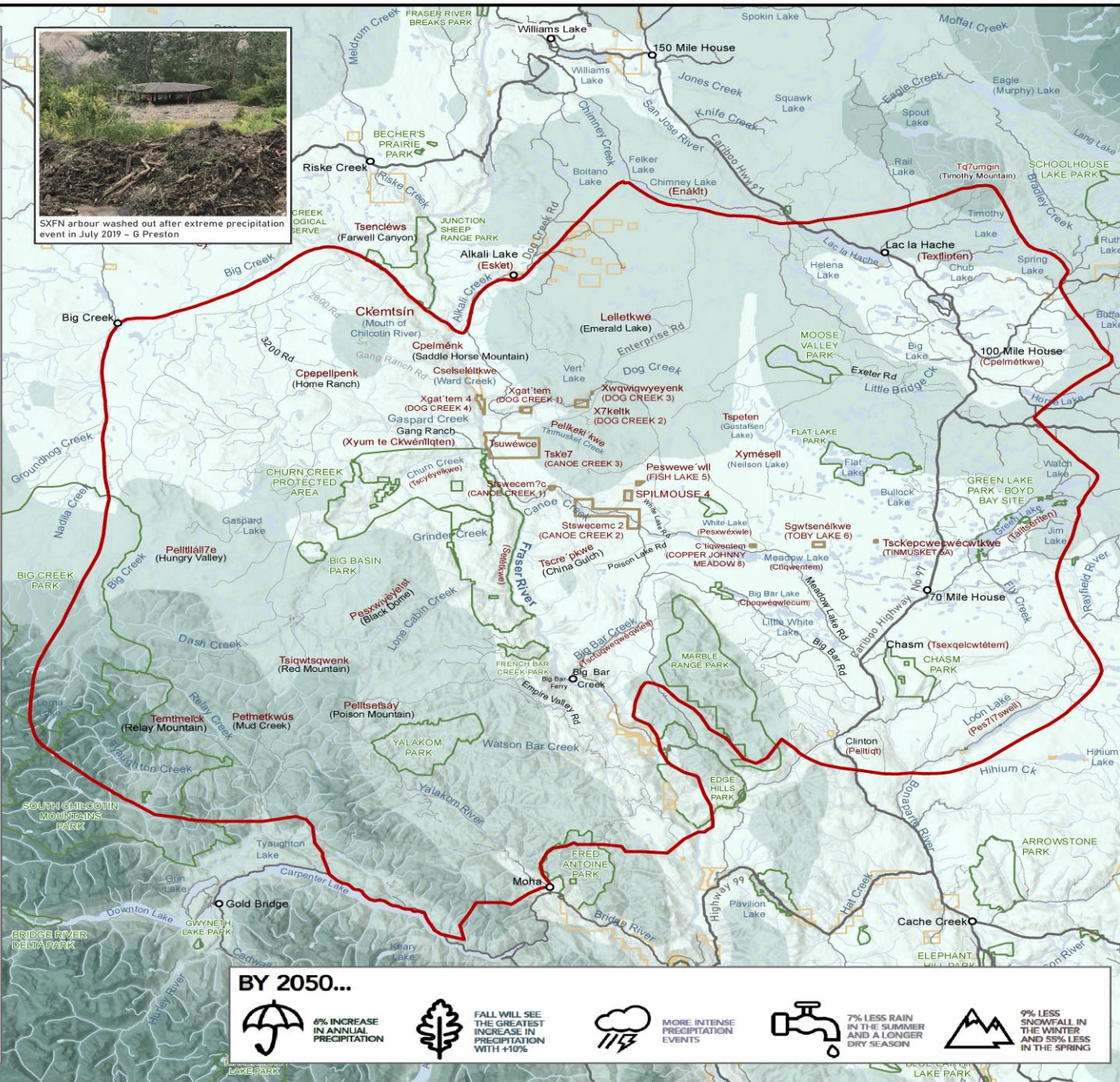
### Change in Mean Annual Precipitation

- 250 - 500 mm
- 501 - 750 mm
- 751 - 1,000 mm
- 1,001 - 1,250 mm
- 1,250+ mm

Coordinate System: NAD 1983 UTM Zone 10  
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It is important to remember that weather is different from climate. Weather is the day-to-day environmental conditions in an area, while climate is the observed pattern of weather in an area over several years. The climate varies greatly over SXFN territory, from the moist wetlands of Gustafsen Lake and the cool alpine regions of the Chilcotin Ranges. This map shows the projected change in average annual precipitation from 1950 to 2050. Already, elders in the community have noticed a change in climate throughout their lifetime. For many, winters have changed greatly in recent years. Where there used to be ten feet of snow in the winters, Dog Creek and Canoe Creek tend to get far less in the present day.

The precipitation in SXFN territory is expected to increase in many areas by 2050. But what does that really mean? The Pacific Climate Impacts Consortium, who spoke at the NSIQ Climate Change Workshop in March 2020, predicted that there will be less precipitation in the summer, spring, and winter months, and far more in the fall. It also predicted that there would be more extreme precipitation events. This was experienced by SXFN in the summer of 2019, when a small number of intense rainstorms led to washouts of the roads between Dog Creek and Canoe Creek, from Gang Ranch to Farwell Canyon, and in other locations throughout the territory. The SXFN territory's road infrastructure did not stand the test of intense rain during that season, meaning that the roads could be further at risk if these weather events become the new normal. Increased flooding is another concern for SXFN. Dry ground conditions over long periods of time can make soil less able to absorb water, and overland flooding can take place. Flooding also occurs after trees die in mass quantities and no plants or forests are present in an area to absorb the water. An example of this situation can be seen at the Dog Creek fire boundary along the road near Brigham Creek. Due to the 2010 fire, many trees were lost, and this has altered the way water is absorbed in the area. The reduced absorption rate, in addition to the steep slopes, has changed how water moves across this landscape, and as a result, the roads continue to get washed out after heavy precipitation events. SXFN must think critically about what it can do to adapt and prepare for different precipitation patterns in the future. The key to preparing for a changing climate is making sure the community is resilient and prepared to bounce back from the unexpected.

### BY 2050...



4% INCREASE IN ANNUAL PRECIPITATION



FALL WILL SEE THE GREATEST INCREASE IN PRECIPITATION WITH +10%



MORE INTENSE PRECIPITATION EVENTS



7% LESS RAIN IN THE SUMMER AND A LONGER DRY SEASON



9% LESS SNOWFALL IN THE WINTER AND 55% LESS IN THE SPRING



# Stswecem'c Xgat'tem First Nation

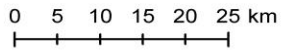
## SPECIES AT RISK Bioregional Atlas

- Stswecem'c Xgat'tem First Nation Traditional Territory
- Stswecem'c Xgat'tem First Nation Reserve
- Other First Nation Reserve
- Grassland Encroachment

- Critical Habitat**
- Great Basin Spadefoot
  - Lewis's Woodpecker

- Species & Ecosystems at Risk (un-masked)**
- |                      |                            |
|----------------------|----------------------------|
| Ecological Community | Vertebrate Animal (others) |
| Vascular Plant       | Invertebrate Animal        |
| Nonvascular Plant    | Fungus                     |
| American Badger      |                            |

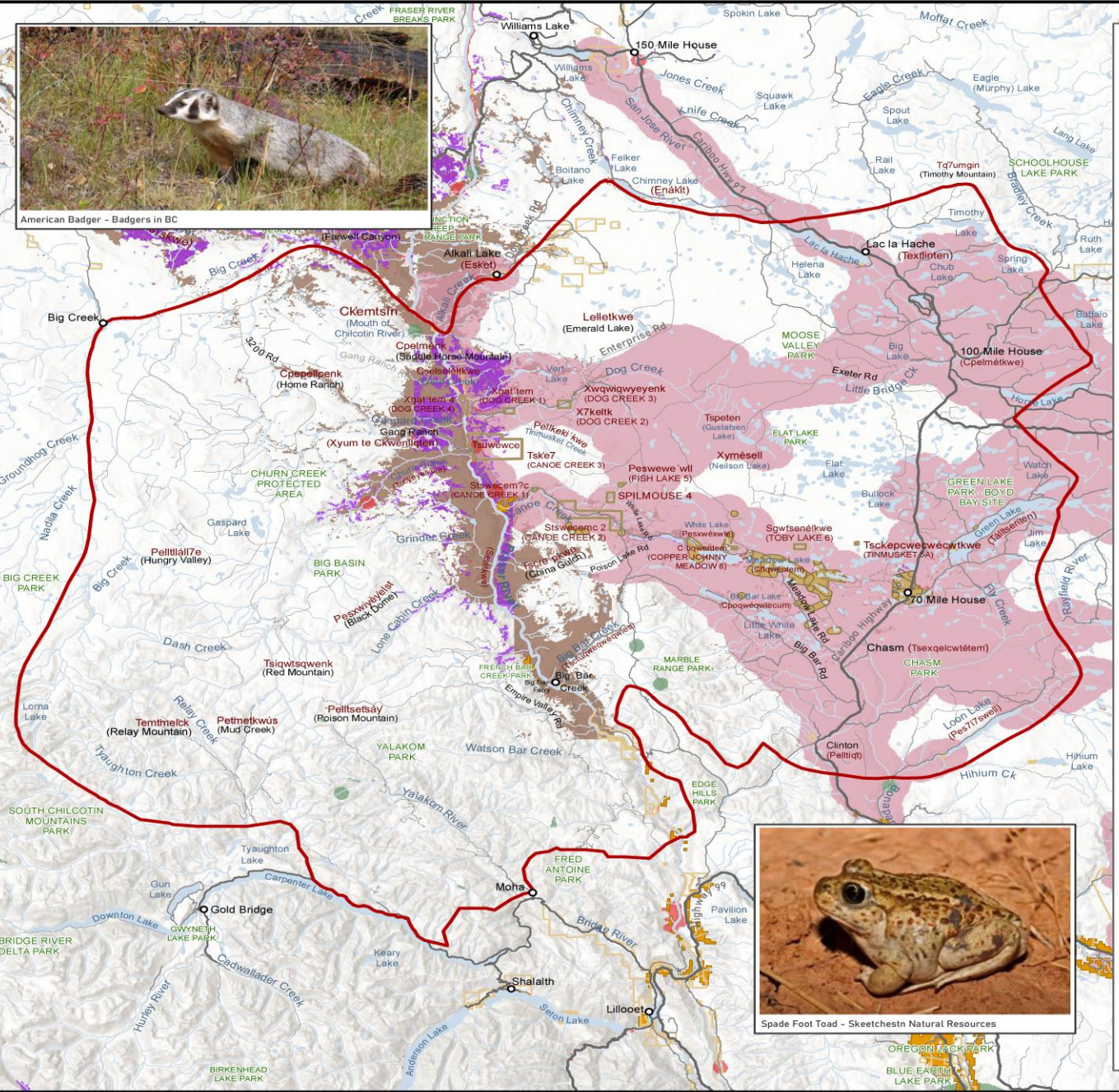
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American Badger - Badgers in BC



Spade Foot Toad - Skeetchestn Natural Resources

Over the past few years, there have been concerns about the decline of wildlife and plant species throughout the traditional territory, especially those used for food and medicine. Ecosystems need a wide biodiversity of different plant and animal species to remain healthy and provide services to all of their components, including humans.

This Species at Risk (SAR) map shows species that have been identified by the BC and Canadian governments as being at risk of disappearing from the land. In SXFN territory, examples of government-recognized SAR include badgers, spadefoot toads, Lewis's woodpeckers, and grizzly bears. In 2015, SXFN stewardship was involved in a study on spadefoot toads and badgers through the BC government.

Entire ecosystems can be listed at risk as well. The grassland ecosystems within SXFN have been determined to be at risk, both from invasive species and the encroachment of trees. The grasslands around Dog Creek and Canoe Creek are highly unique and are home to species not seen anywhere else in the province, country, or world. The grasslands and their waters contain a special diversity of birds, including long-billed curlews, American white pelicans, and western bluebirds. It is important to protect this special ecosystem, its grasses, and its animal species.

In the past, SAR designations have not used Indigenous traditional ecological knowledge (TEK) to inform them. This is gradually changing as Indigenous people's rights and knowledge become more acknowledged and respected by non-Indigenous societies in Canada. If SXFN has more power to influence SAR designations, more species that are important to the nation, but perhaps not to non-SXFN citizens, would be recognized and protected by BC and Canadian laws in addition to SXFN's Land Use Policy.



## STAGE 2 GROUND TRUTHING PROJECT

Training to monitor and map changes within the territory from a modern and indigenous perspective

### STAGE TWO OF THE BIO REGIONAL MAPPING PROJECT

Stage 2 involves listing and Mapping the information collected into a Remote Environmental Monitoring so that our Guardians can have the tools and information required to monitor areas around the territory where sensitive eco systems are in danger.

The Second Stage or “GROUND TRUTHING STAGE” of our project has just started with support from Canada through the BCCI program.





## GROUND TRUTHING PROJECT

1. Training and Knowledge Building of the Stewardship Territorial Monitoring Team
  - A, Data Base evidence gathering
  - B. Recording Territorial Monitoring using REM Software
  - C. Monitoring Lakes and Rivers and evaluating water quality
  - D Monitoring the health of the ecosystems in areas of resource developments
  - E. Utilizing Drone footage to monitor activity within slide and prone area and
  - F. Working with Canada to monitor and rebuild territorial nesting habitat
  - G. Working with BC to co manage BC Parks within the territory