Bat research in NE BC: Hibernacula identification in the Williston Basin

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Outline

- Regional bat diversity
- Life history strategies (migration and hibernation)
- Threats to bats
  - White-nose syndrome
  - Resource development
- Winter bat ecology / hibernacula identification
  - Methods
  - Underground hibernacula
  - Above ground hibernacula
  - Findings

Bats in the Peace Region

- **8 species of bats:**
  - **Little brown myotis (*federally endangered*)**
  - **Northern myotis (*federally endangered*)**
  - **Western long-eared myotis**
  - **Long-legged myotis**
  - **Big brown bat**
  - **Silver-haired bat (*status review pending*)**
  - **Hoary bat (*status review pending*)**
  - **Eastern red bat (*status review pending*)**

Eastern Red Bat

Credit: Jared Hobbs all photos

Migratory Tree Bats

- Hoary bat, silver-haired bat, eastern red bat
- Roost in trees or foliage
- Can migrate long distances (>1,000 km)
- Do not overwinter in NE BC
- Most vulnerable to wind turbines
- Little knowledge of these species in northern BC

Non-migratory / resident bats

- **Big brown bat and *Myotis spp.* (little brown, northern, long-eared, long-legged)**
- **Localized seasonal migration between summer and winter habitat**
- **Roost in bluffs, crevices, caves, tree bark and cavities, man-made structures**
- **Hibernate in caves, crevices, mines**
- **Most vulnerable to white-nose syndrome**

Establishing baseline conditions… before the baseline changes

- **Locate important and/or critical habitats**
  - **Hibernacula**
  - **Maternal roosts (esp. colonial species)**
- **Identify risk**
- **Monitor populations and disease spread**
- **Identify opportunities for recovery**

Identification of bat hibernacula – Williston Reservoir

Objective

- **Identify bat hibernacula within the Williston Reservoir with specific focus on endangered little brown and northern myotis**

Methods

- **Acoustic monitoring near rock features and in caves (focus on late fall, winter, early spring detections)**
- **Review of geological mapping and exploration of karst landscapes to find caves that may be suitable for hibernating bats**
- **Cave exploration with experienced team**
- **Fall capture and telemetry to locate potential hibernacula**

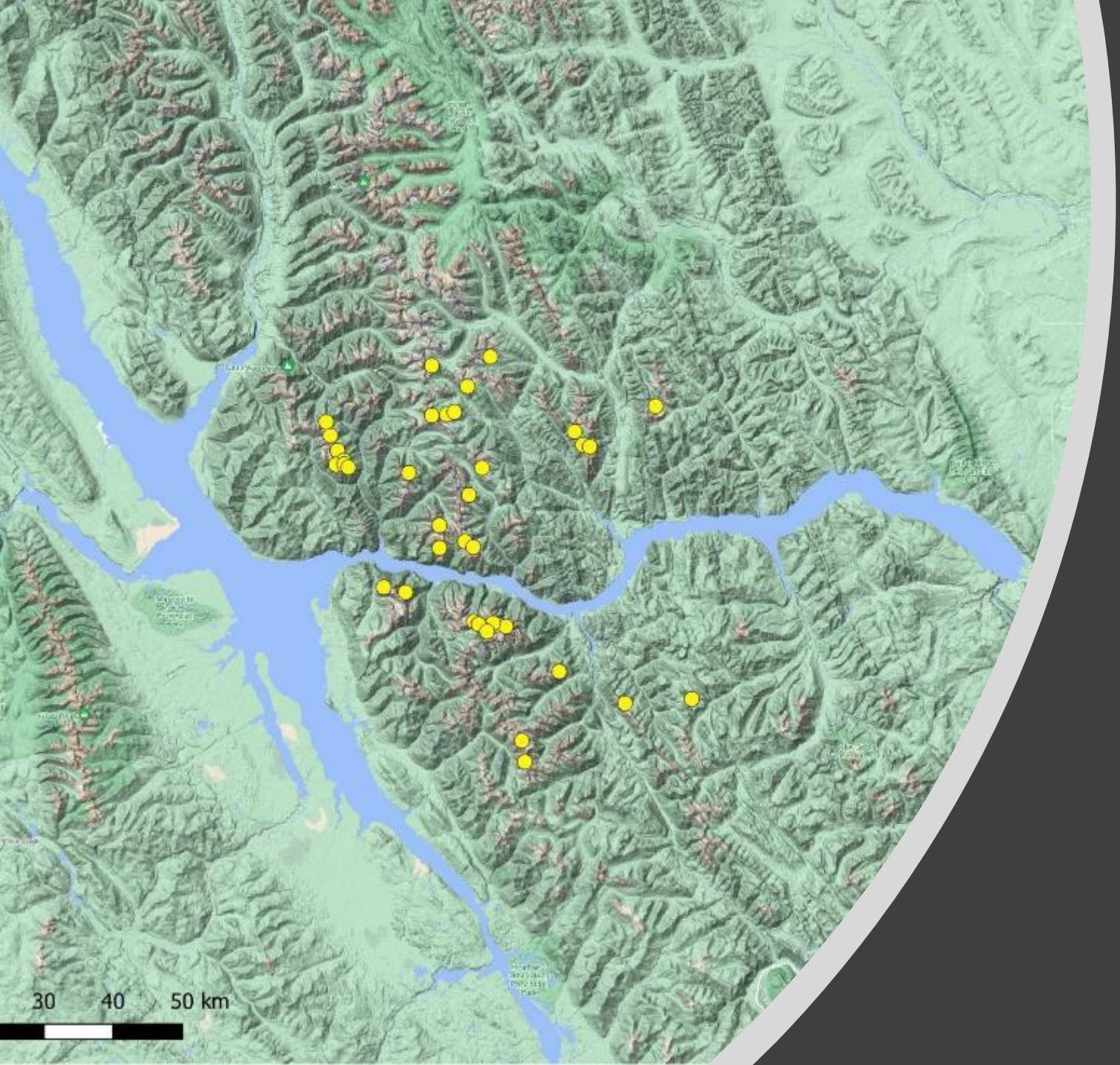
Finding caves from the desktop

OBJECTIVE: Identify areas with strong cave-bearing potential

Layers reviewed:

- **Bedrock Geology (including fault lines)**
- **Topography and drainage (resurgences and sinks)**
- **Orthophotos (cave entrances and karst features)**
- **Karst potential mapping (iMapBC, 1:20,000 TRIM, 1:50,000 NTS maps)**


FAULT
ANTICLINE
CARIBOO
BURDEN
BLACK BEAR RIDGE
SYNCLINE
JONES PEAK
WEDGE PEAK
ADVANCE MTN
PEACE
RIVER



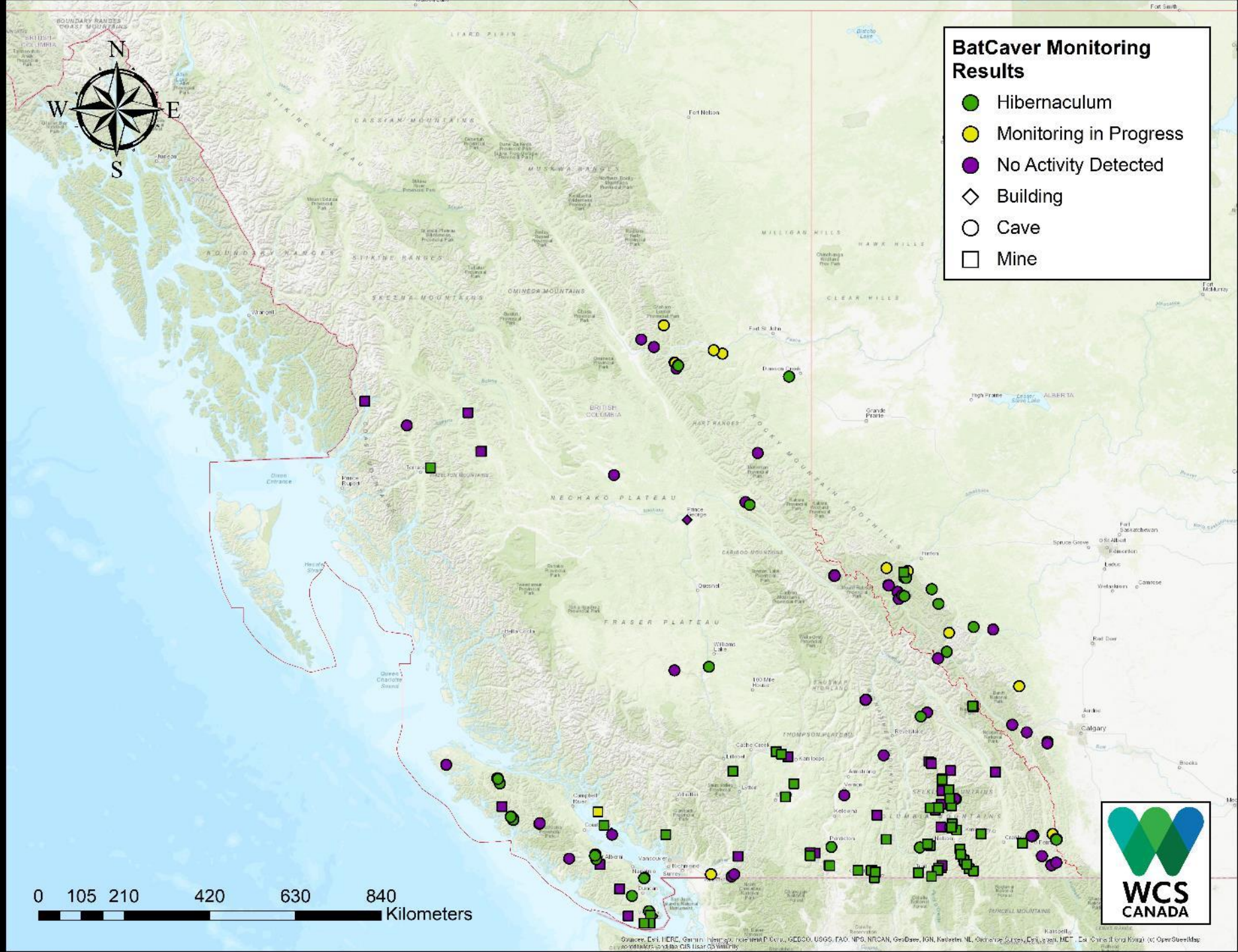
Karst features for reconnaissance

- **39 suspected karst surface features identified in 16 / 22, 1:20,000 map sheets reviewed**
- **All suspected features > 1,400 m elevation**
- **Most (23) > 1,600 m elevation**

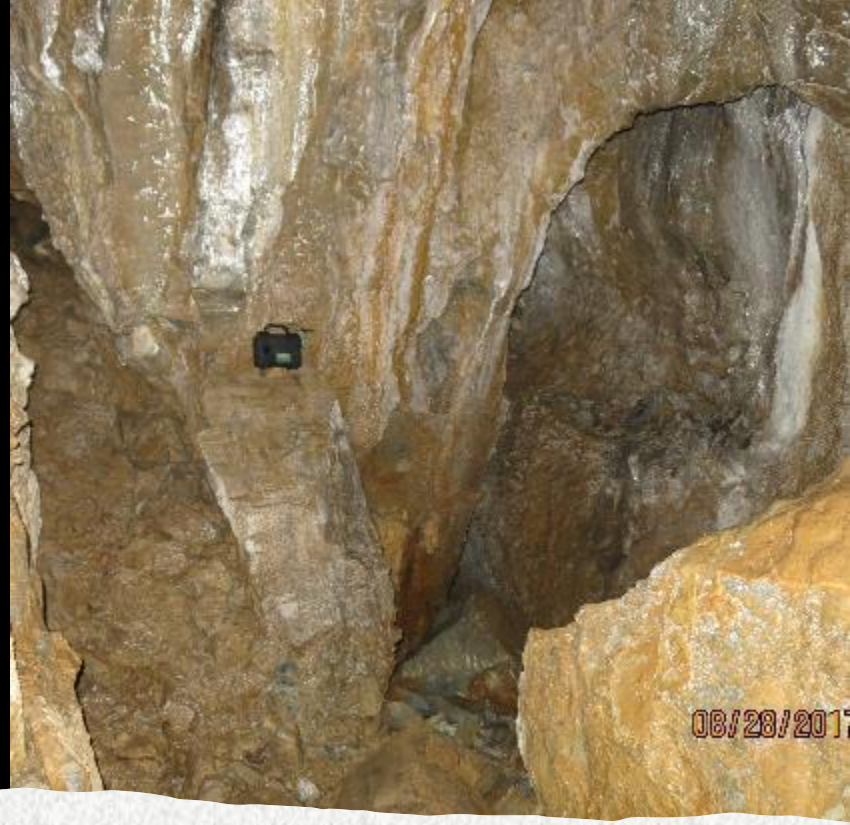
BatCaver

- Active in BC and Alberta
- Relies on expertise of cavers to help bat research
- Promote bat awareness & conservation

BAT CAVER.ORG
Helping Our Bats



Different cave types encountered



Williston Winter Bat Ecology - Acoustics

- Surface acoustic monitoring at 22 locations
- Subsurface monitoring at 10 locations

Underground Detector Deployment

Above ground detector deployment

Winter Bat Ecology - Findings

- Discovery of three cave-bearing strata (Bocock Formation was already known)
- 14 hibernacula identified
- 12 cliff/bluff hibernacula (bats using cracks and crevices)
- Two caves with winter myotis activity

Winter Bat Ecology - Bat Behaviour

Big Brown Bats active (at low level) all winter.

Temperature and wind speed seem to be reasonable predictors of activity.

Cliff/bluff hibernacula have south-facing exposure

No winter myotis at rock bluffs despite high spring and fall activity???

Reasons for winter flight unclear

Winter Bat Ecology – Other Results

Multi-species bat hibernacula

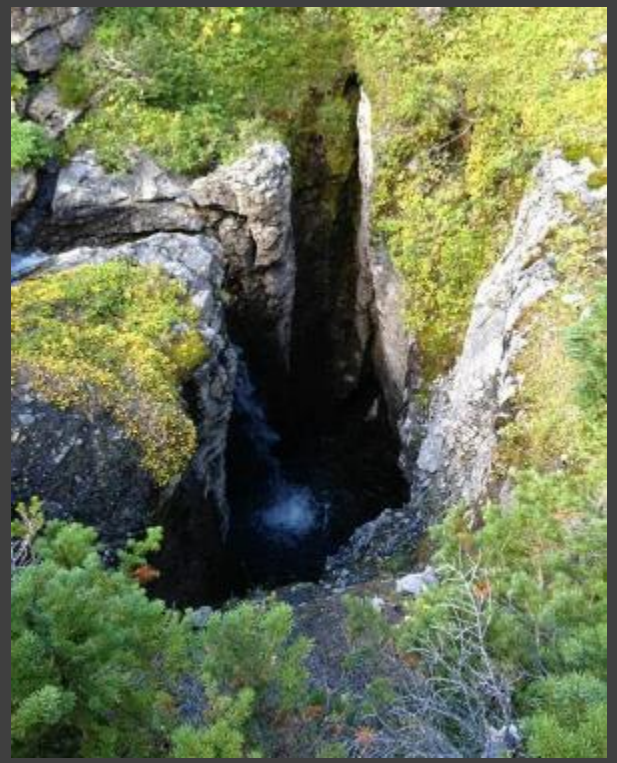
Likely Long-eared Bat maternal roost

Eastern Red Bat migration along north side of Peace Arm

Hoary and Silver-haired Bat migration timing

High Silver-haired Bat activity on west side of Williston and very low Big Brown Bat activity

High Silver-haired Bat fall activity at high elevation



Next Steps…

- Further exploration and research in cave systems identified to date
- Ground survey of unsurveyed caves / cave systems inside and outside of Williston Boundary
- Continue cave and karst inventory north of present study area. Cave potential may be greater due to more massive ranges and greater potential for karst plateaus.
- Continue baseline data collection at surface hibernacula

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- West Moberly First Nation
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- Northern BC Caving Club (member of the BC Speleological Federation)

FWCP Fish & Wildlife COMPENSATION PROGRAM

WCS CANADA

BRITISH COLUMBIA SPELEOLOGICAL FEDERATION

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