Moving right along
Wildlife use of beaver dams

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10th International Beaver Symposium, Inverness, Scotland

How do dam and landscape type influence wildlife use of beaver dams?

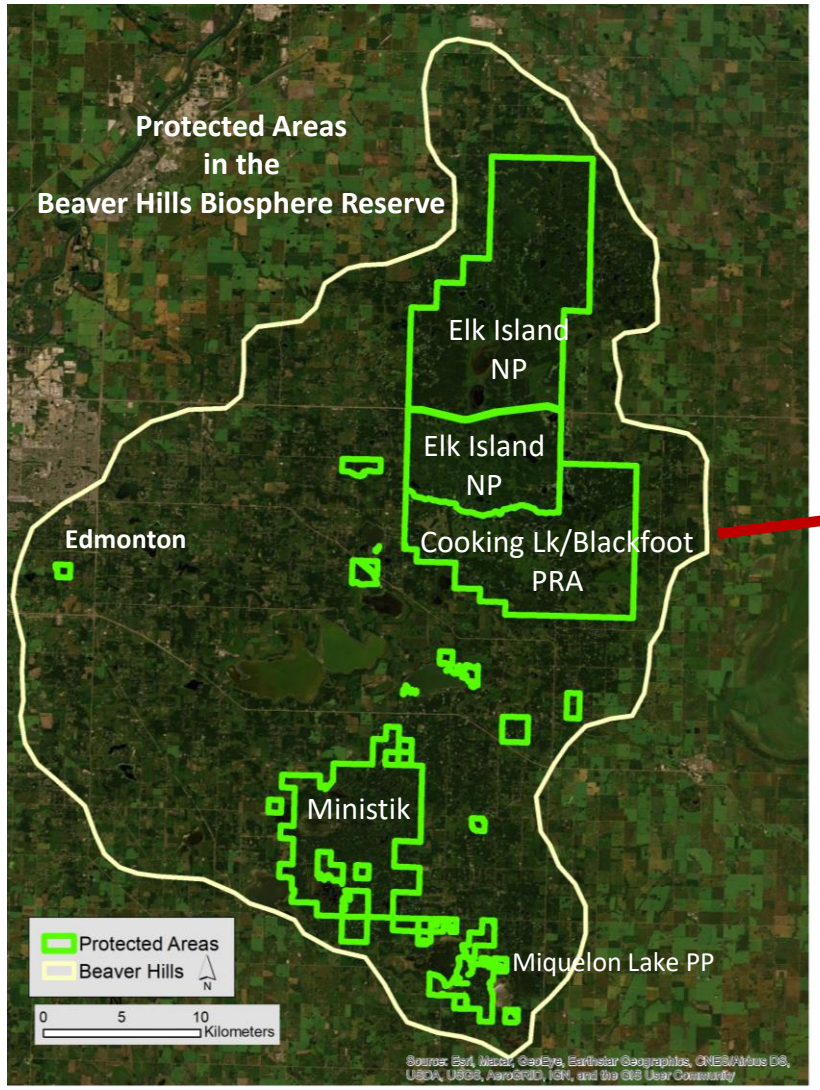
- Are there regional differences?
- Is the number of species influenced by dam length?
- What key behaviours and interspecific activity patterns are most prevalent on beaver dams?

American black bear
Ursus americanus

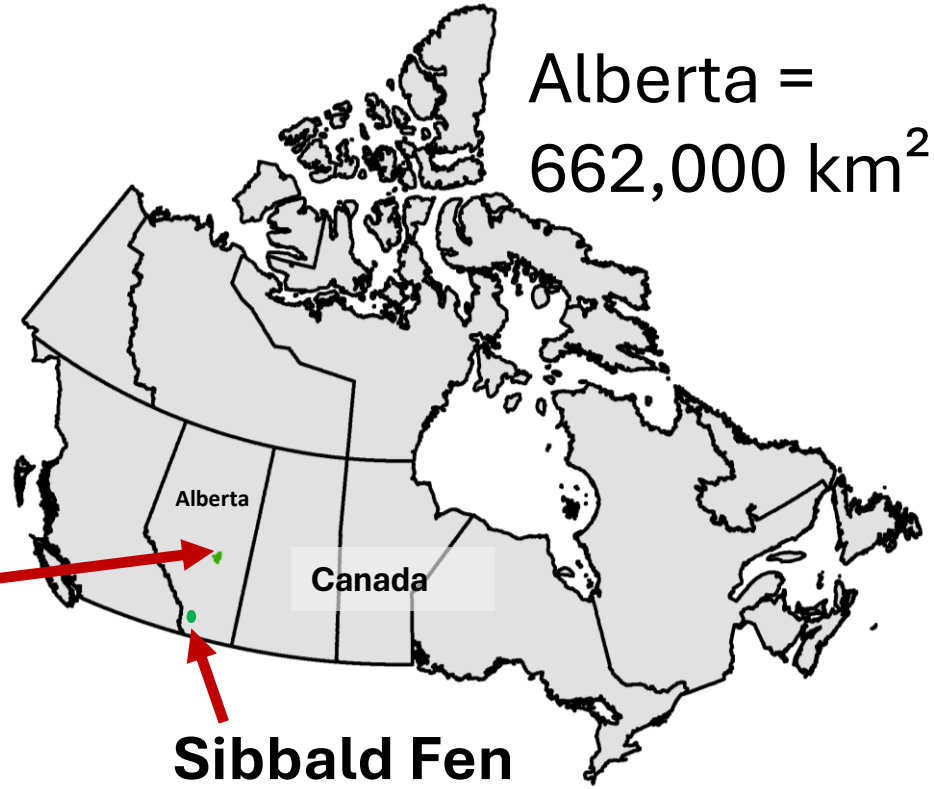
Ecological Connectivity

1. **Structural connectivity** - physical arrangement of habitat patches
2. **Functional connectivity** - how organisms move through and use the landscape

Beaver Hills Biosphere Reserve



- 1,572 km^2
- Dry southern mixed-wood boreal forest
- Dark Sky Preserve



Alberta = 662,000 km^2

Sibbald Fen

- 2.1 km long, 0.4 km wide
- Montane peatland in the Canadian Rocky Mountains (depth 0.5 to 6.5 m)

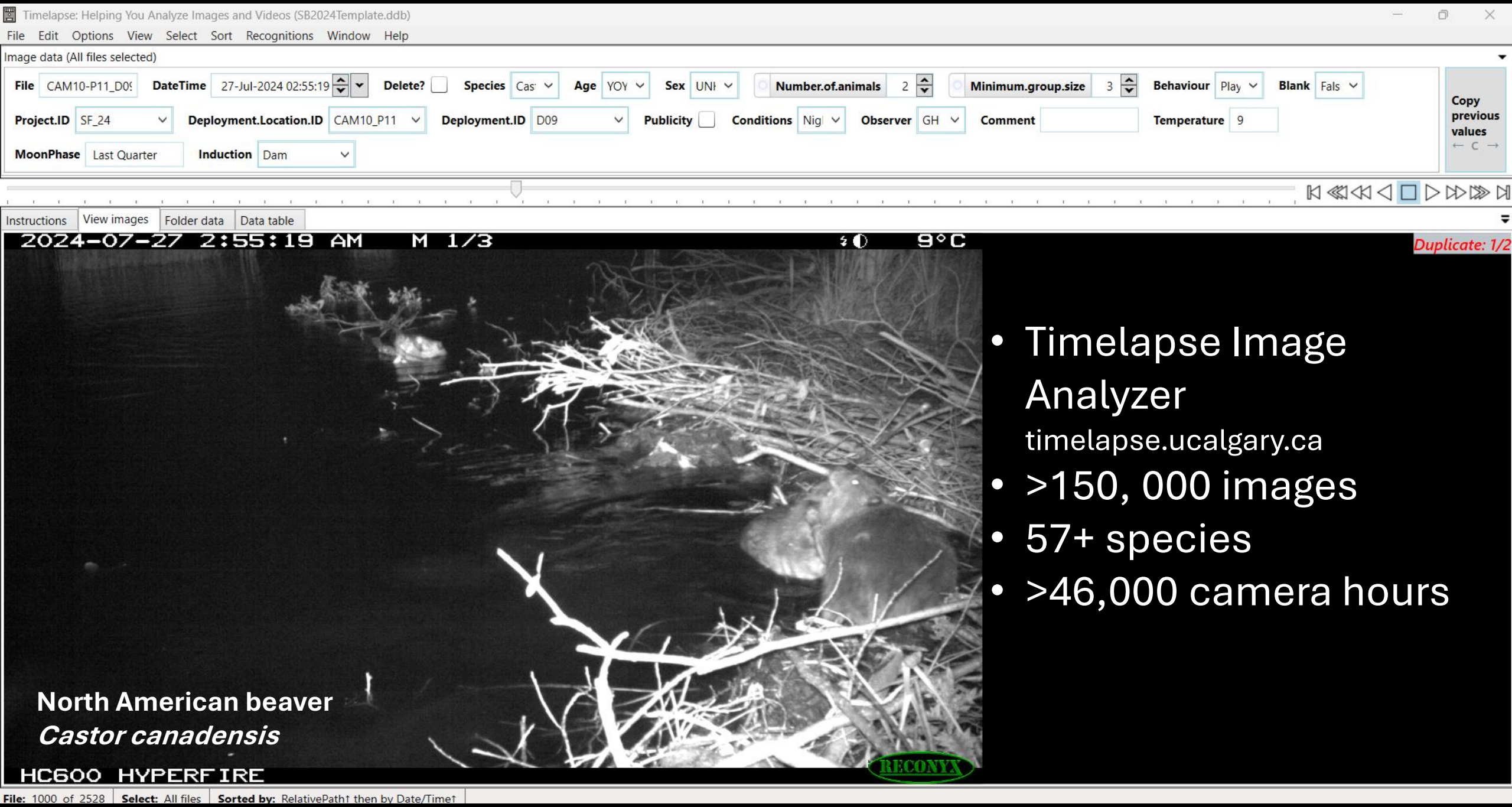
Beaver dam cameras

Beaver Hills (Moraine)
2020–2022
Dams = 6, Sites = 7
Deployments = 30

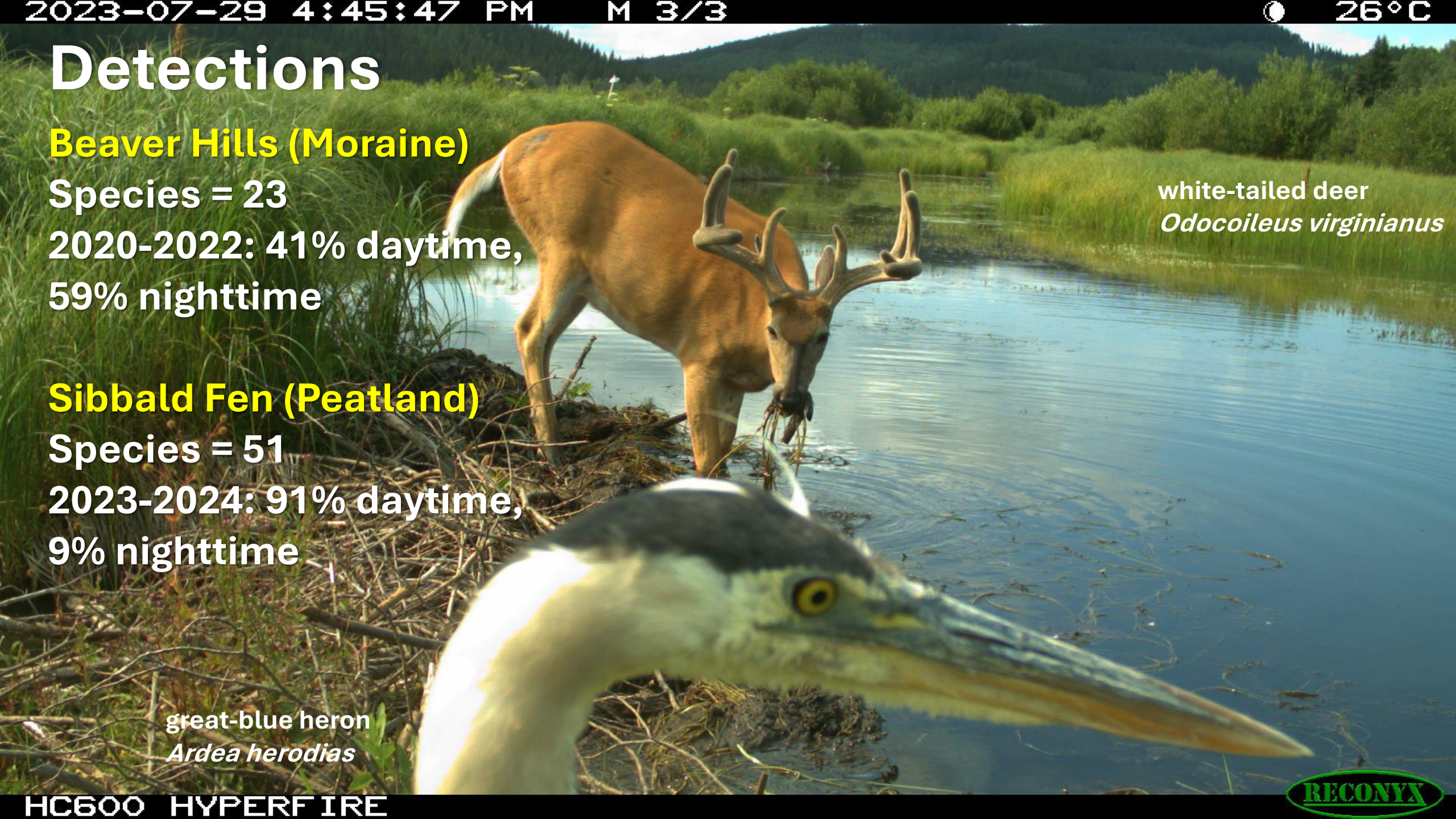
Sibbald Fen (Peatland)
2023 - 2024
Dams = 16, Sites = 40*
Deployments = 231

Standardize data by camera hours

*often on same dam



- Timelapse Image Analyzer
  timelapse.ucalgary.ca
- >150, 000 images
- 57+ species
- >46,000 camera hours

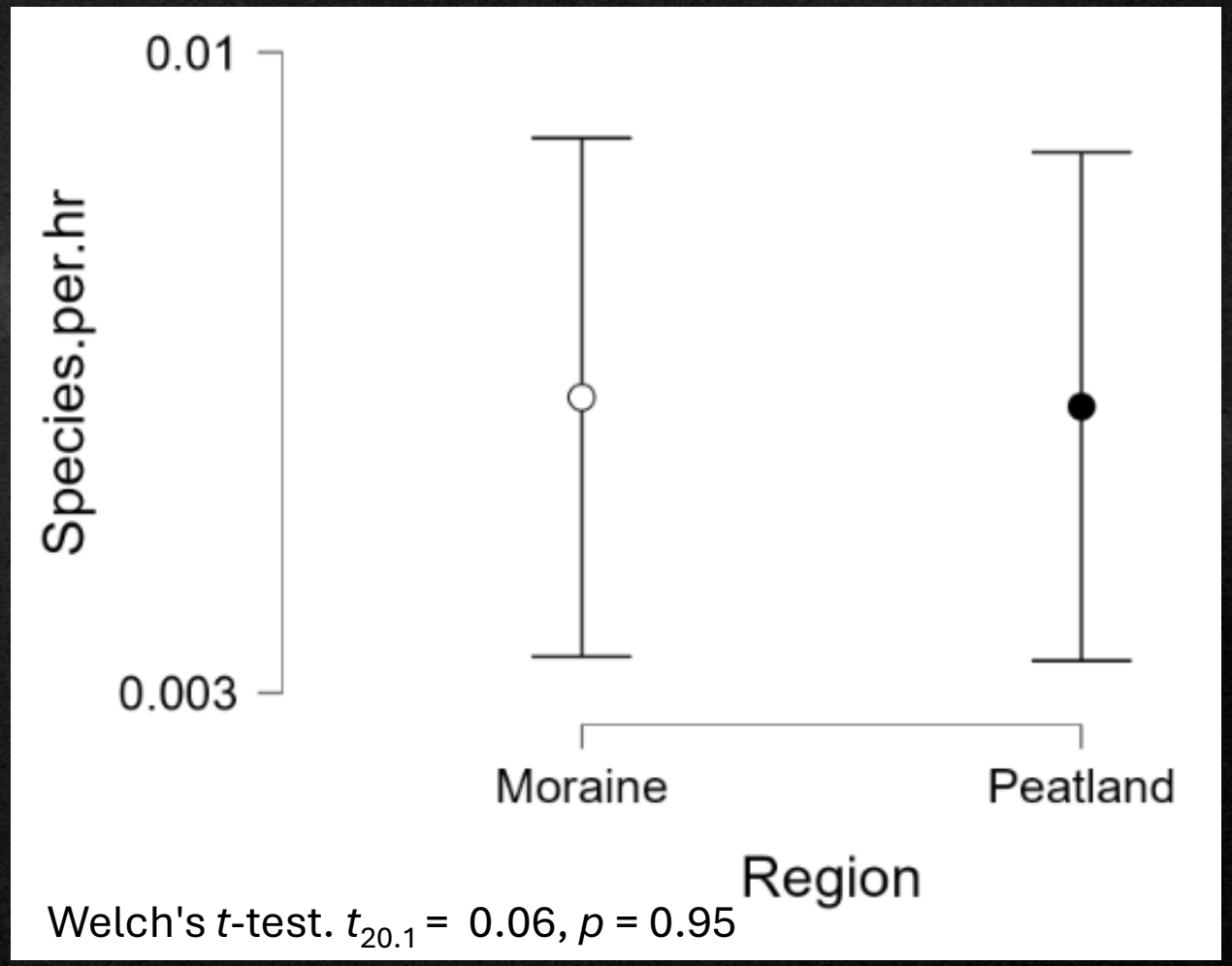

2023-07-29 4:45:47 PM M 3/3 26°C
Detections
Beaver Hills (Moraine)
Species = 23
2020-2022: 41% daytime,
59% nighttime
white-tailed deer
Odocoileus virginianus
Sibbald Fen (Peatland)
Species = 51
2023-2024: 91% daytime,
9% nighttime
great-blue heron
Ardea herodias
HC600 HYPERFIRE
RECONYX

2024-08-04 12:33:59 PM M 3/3
27°C
Dominant species
Moraine
Canada goose (n = 47)
beaver (n = 105)
Peatland
green-winged teal (n = 2,345)
beaver (n = 1,656)
green-winged teal
Anas carolinensis
HC600 HYPERFIRE
RECONYX

2023-05-21 1:40:23 AM M 1/3 7°C

Species differences

grey wolf
Canis lupus

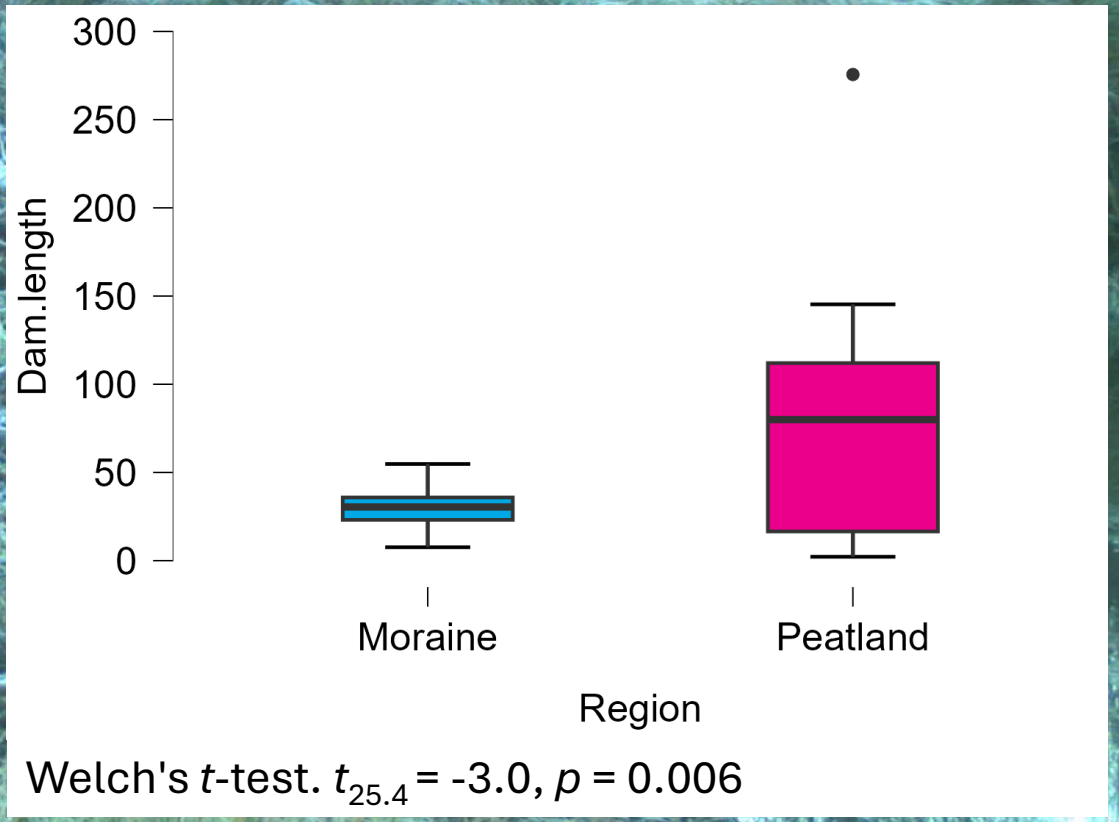


Welch's *t*-test. $t_{20.1} = 0.06$, $p = 0.95$

Jaccard similarity index = 0.19

HC600 HYPERFIRE
RECONYX

Dam length



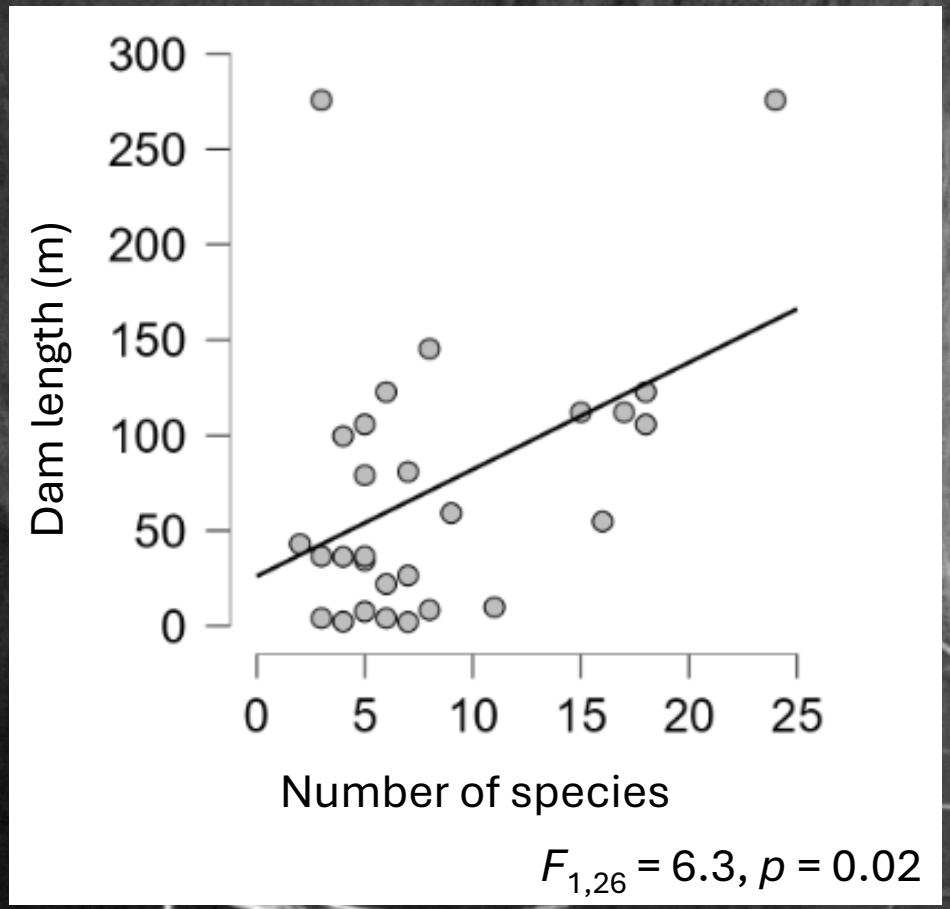
Welch's *t*-test. $t_{25.4} = -3.0$, $p = 0.006$

coyote
Canis latrans

PC900 PROFESSIONAL
RECONYX

2023-08-15 11:45:58 PM M 1/3 19°C

Dam length and Species Richness



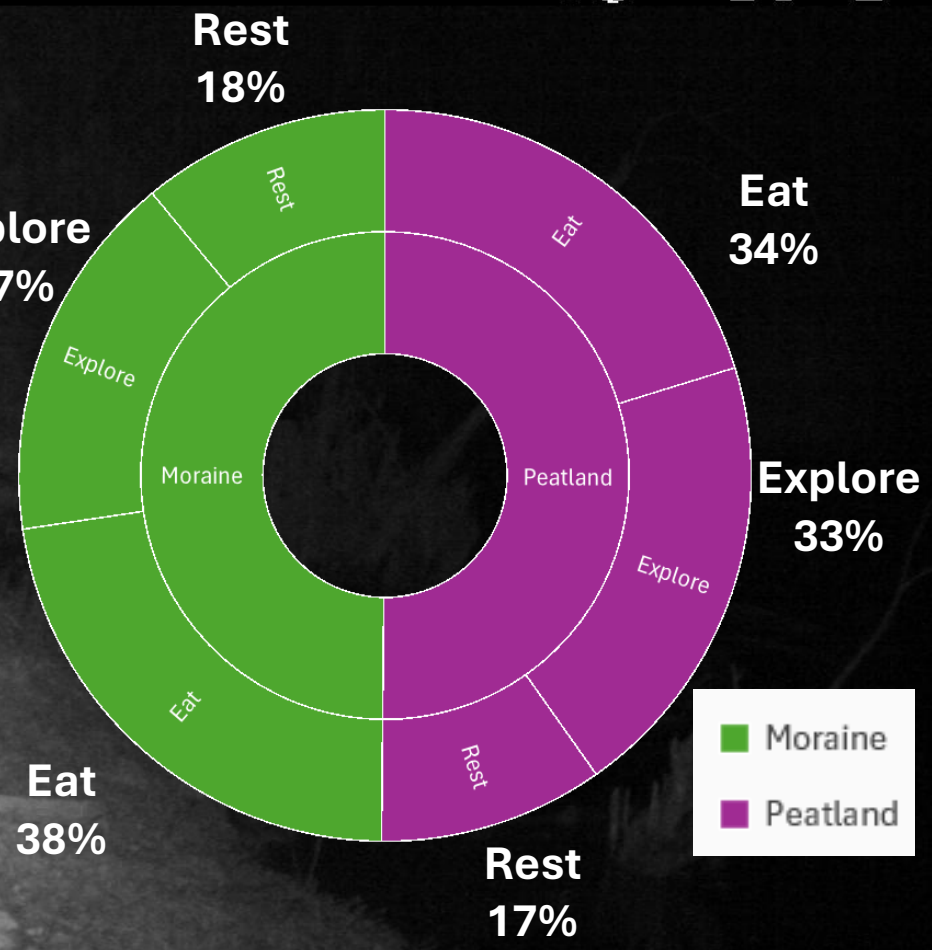
$F_{1,26} = 6.3$, $p = 0.02$

snowshoe hare
Lepus americanus

HC600 HYPERFIRE
RECONYX

2020-10-07 8:14:27 PM M 2/3 10°C

Behaviour



coyote
Canis latrans

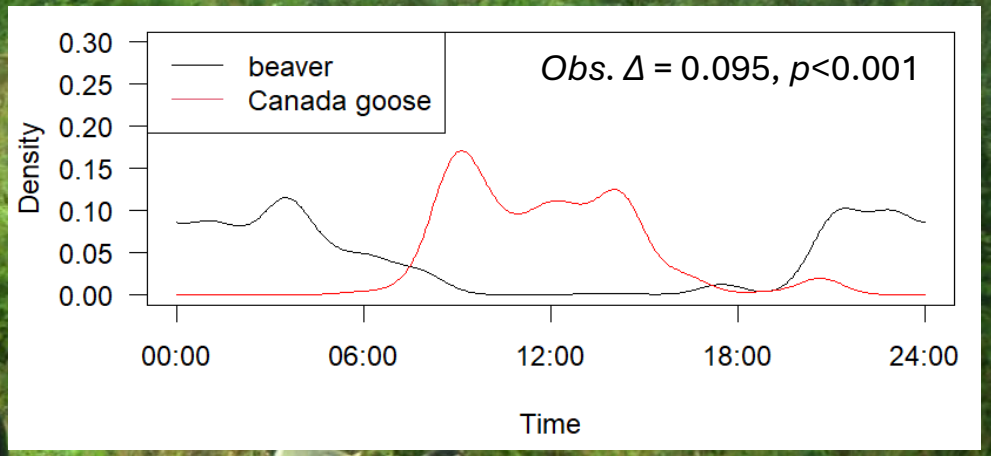
North American porcupine
Erethizon dorsatum

HC600 HYPERFIRE

RECONYX

2020-08-17 9:43:34 AM M 3/3 25°C

Behaviour



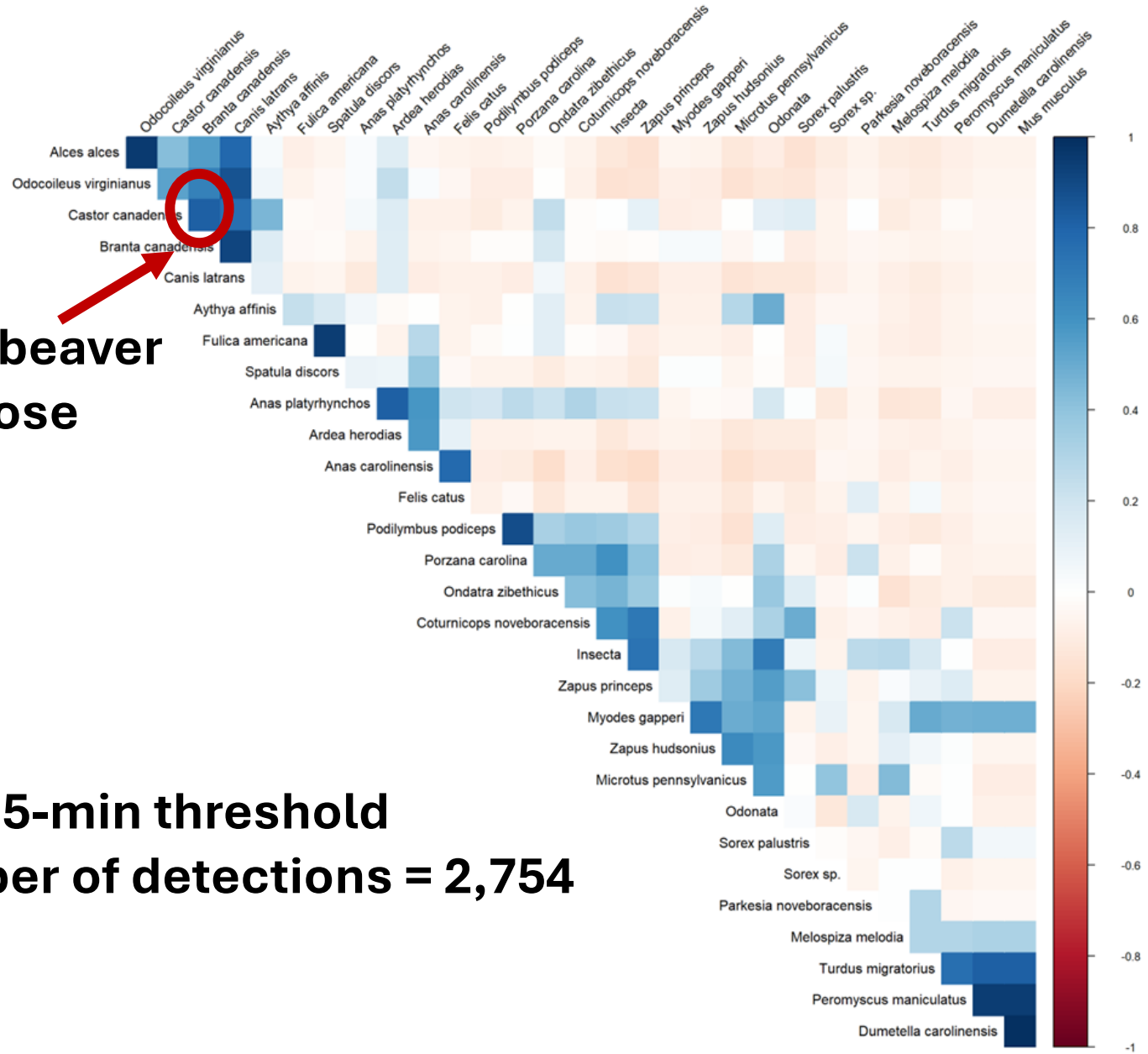
Canada goose
Branta canadensis

Hood. 2024. *Freshw. Biol.*

HC600 HYPERFIRE

RECONYX

Site-level species covariance for 2020 and 2021 Beaver Hills



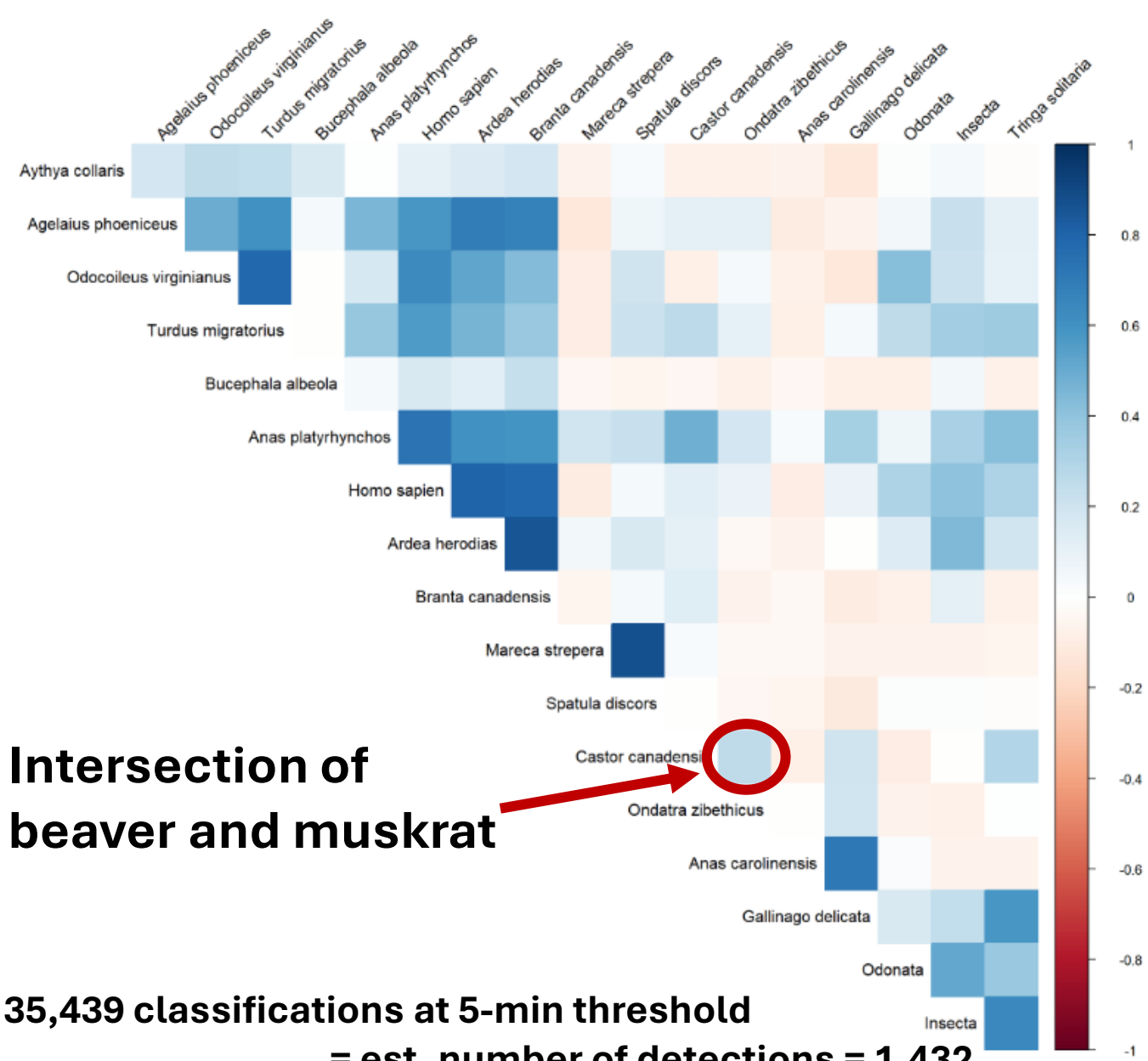
Intersection of beaver and Canada goose

49,166 classifications at 5-min threshold
= est. number of detections = 2,754

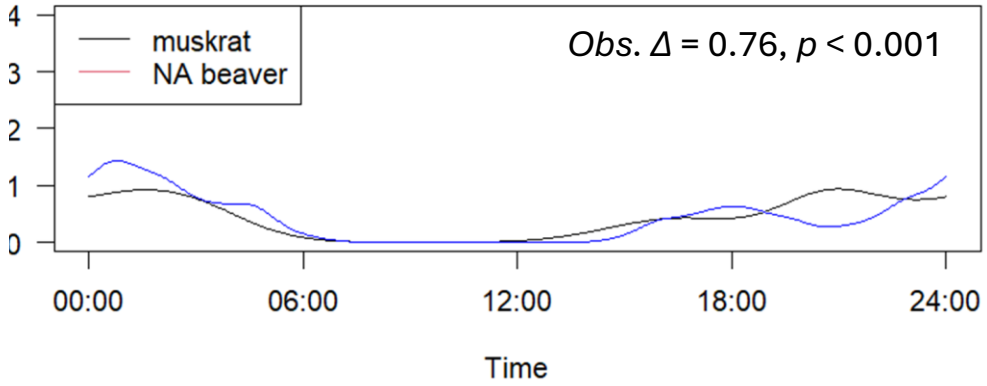
WildCo

Hood. 2024. *Freshw. Biol.*

Site-level species covariance for 2023 and 2024 - Sibbald Fen



Intersection of beaver and muskrat



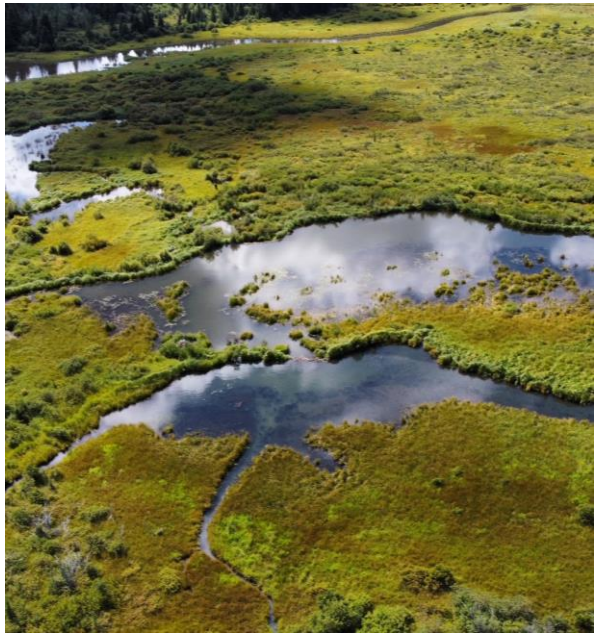
35,439 classifications at 5-min threshold
= est. number of detections = 1,432

Conclusions

- Beaver Hills Moraine – shorter dams (“stepping stones”)
- Sibbald fen – longer dams (“highways”)
- ⬆ dam length = ⬆ species richness
- Different species composition but similar # of species/sampling effort
- Top behaviours = explore (travel), eat, and rest
- Spatial and temporal relationships similar with some regional species variation

Beaver Hills Moraine

Sibbald Fen



Thank you!
Tapadh leat

Mateya Bluett
Chelsea Cook
Katelynn Cook
Julia Howell Bourner
Rae Metrunec
Sam Priestley
Rhona Sinamtwa
Jessica Welsh-Howe

mountain lion
Puma concolor