Remote cameras for monitoring wildlife and climate change in BC Parks

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Talk outline

• Remote cameras as an emerging biodiversity monitoring tool
  • Wildlife (WildCAM)
  • Phenology (phenocams)

• Linking wildlife, phenology and climate

• Monitoring vision and proposed pilot in Cathedral Park

• Feedback (please 😊)
The use of cameras has grown rapidly

Breakdown by Year and Objective

Springer

Burton et al. 2015
Multi-scale, multi-species monitoring tool

Scaling-up camera traps: monitoring the planet’s biodiversity with networks of remote sensors

Steenweg et al. 2017, Front Ecol Environ
WildCAM: Wildlife Cameras for Adaptive Management

• Developing and testing methods
• Image and metadata standardization & storage
• Synthesis across existing projects
• Coordinated distributed experiments
• Citizen science & education

* Building on pioneering efforts such as eMammal and the Tropical Ecology Assessment & Monitoring (TEAM) network
Using phenocams to monitor our changing Earth: toward a global phenocam network

Brown et al. 2016 *Front Ecol Environ*

PHENOCAM

An ecosystem phenology web camera network
https://phenocam.sr.unh.edu/webcam/

Data Descriptor: Tracking vegetation phenology across diverse North American biomes using PhenoCam imagery

Andrew D. Richardson¹,²,³, Koen Hufkens¹, Tom Milliman⁴, Donald M. Aubrecht¹, Min Chen¹, Josh M. Gray⁵,⁶, Miriam R. Johnston¹, Trevor F. Keenan¹,⁷, Stephen T. Klosterman¹, Margaret Kosmala⁵, Eli K. Melaas⁵, Mark A. Friedl⁵ & Steve Frolking⁴

[www.nature.com/scientificdata](http://www.nature.com/scientificdata) 13 March 2018
Why not do both?

Timelapse video, northern Alberta, 2016
Linking Wildlife, Phenology & Climate

• Wildlife behaviours and population dynamics linked to phenology
  • “Surfing the green wave” (seasonal migration tracking spring forage)
  • Snow depth and timing affect winter survival, den emergence

• Expect shifts in phenology (e.g. earlier springs)

• Other expected climate shifts (e.g. ranges shifting northward and upward, disease prevalence, colour mismatch)

• Uncertainty in model predictions

• Need empirical evidence, grown-truthing model inputs, testing model outputs
Can cameras be part of ecological monitoring in parks?

What would a camera program look like?

• Small number of long-term, timelapse & motion cameras to record:
  • Phenology (snow melt, spring green-up, fall senescence)
  • Wildlife occurrence (and human use)

• Aided by citizen science (naturalists, school groups)

• Supplemented by more detailed (shorter-term) research projects
  • e.g., larger camera arrays for wildlife population estimation, habitat associations, hypothesis tests
Cathedral Park pilot study

• Conservation 451 Field School
  • UBC Forestry (Sally Aitken, Suzie Lavallee)

• Alpine Ecosystem module (~ 1 week, early Sept)
  • Vegetation plots along elevational transects

• Initial deployment of 5 Reconyx cameras from forest to tree line
  • Students taught to check cameras, process & analyze images
  • Proof of concept (effort, cost, data quality)
  • Initiate long term record of wildlife occurrence and veg/snow phenology