

## UPDATES

We are proud to introduce **The Edge**: our first annual synthesis of BERA research! Please [download a copy](#) to share within your networks.

BERA welcomes new researchers **Nicole Byford** and **Xue Yan Chan** to the Remote Sensing team, **Christina Bao** to the Eco-hydrology Team, and **Spencer Quayle** to the Vegetation team.

Congrats to BERA graduate **Colette Shellian** (UofC), who successfully defended her MSc!

New Publications:

- [Canada Warbler response to vegetation structure on regenerating seismic lines](#)
- [Mounding treatments set back bryophyte recovery on linear disturbances in treed peatlands](#)

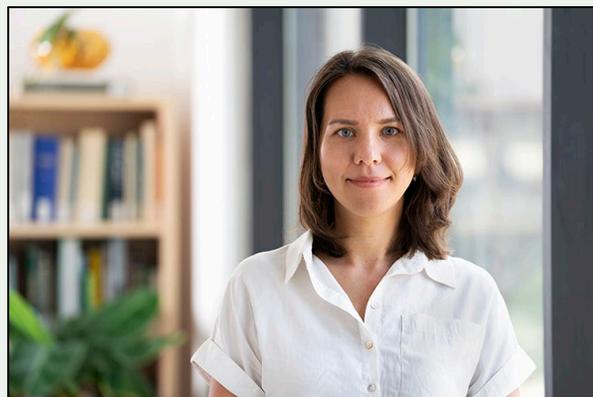
## FIELD WORK 2022



BERA just completed its most intensive field season yet, with 15 research teams measuring everything from trees to methane bubbles! This effort would not have been possible without the support by our BERA staff, summer assistants, and personnel from partner organizations NRCAN, ABMI, Cenovus, ConocoPhillips, CNRL, Imperial, and Al-Pac.

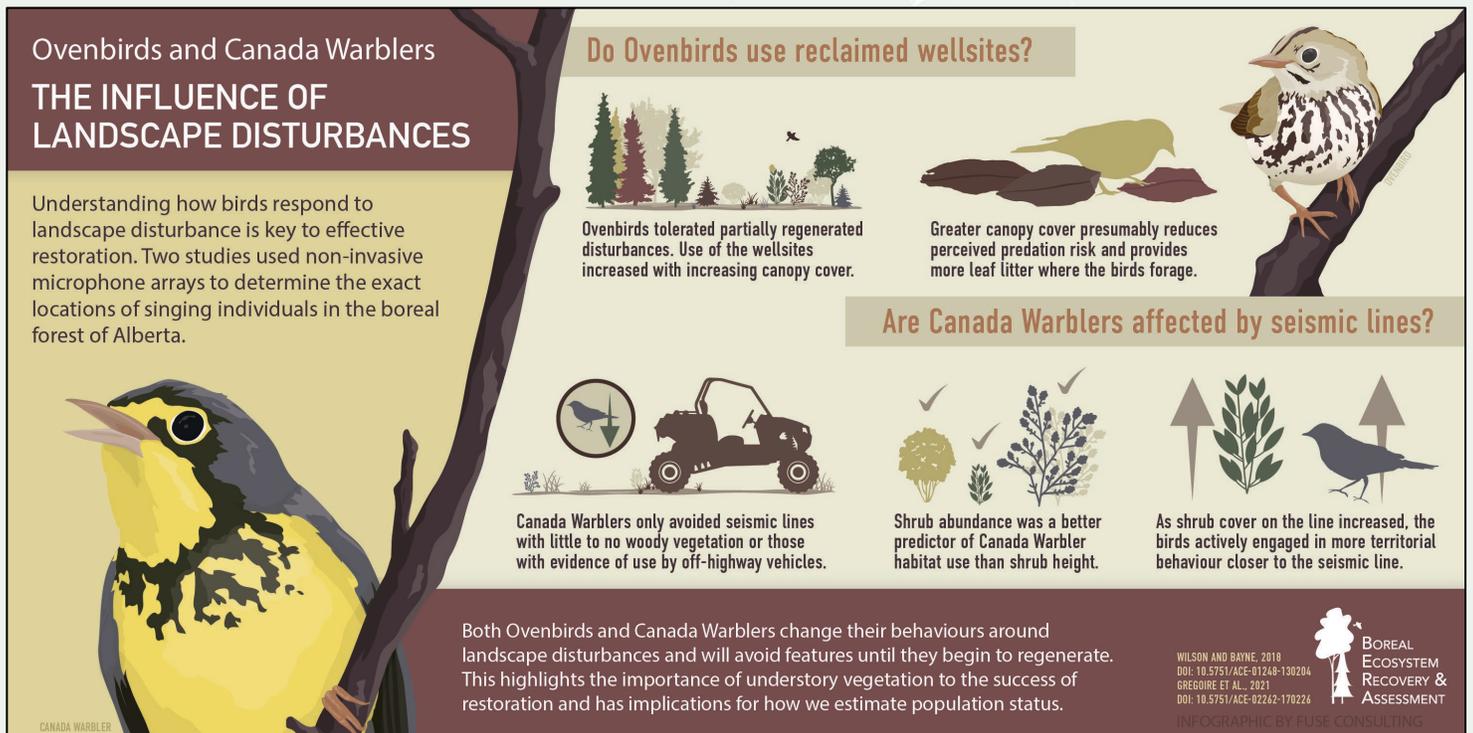
## RESEARCHER PROFILE

Dr. Irina Terenteva is a postdoctoral associate at the University of Calgary. Her current research uses deep learning to detect trees regenerating on seismic lines. Irina's long-term goal is to develop a variety of artificial-intelligence tools to support operational forest restoration activities. Outside of her studies, Irina loves the great outdoors and craves adventures. Ask her about her caving adventures!





## RESEARCH HIGHLIGHTS (1 OF 2)



Understanding how birds respond to landscape disturbance is key to effective restoration. Two studies used non-invasive microphone arrays to determine the exact locations of singing individuals in the boreal forest of Alberta.

BERA researcher shows that both Ovenbirds and Canada Warblers change their behaviours around landscape disturbances and will avoid features until they begin to regenerate. This highlights the importance of understory vegetation to the success of restoration and has implications for how we estimate population status.

To read the peer-reviewed articles behind this research, [click here](#) and [here](#).

[Click here](#) to download a copy of the infographic.



## RESEARCH HIGHLIGHTS (2 OF 2)

### Mapping Coarse Woody Debris

Coarse woody debris is a natural component of forest ecosystems that affects nutrient cycling, carbon storage, wildfire fuel, microhabitats, and overall forest structure. However, mapping and estimating volumes of coarse woody debris can be difficult since amounts vary between ecosystem types and are affected by disturbances including **fire, insects, and disease**.

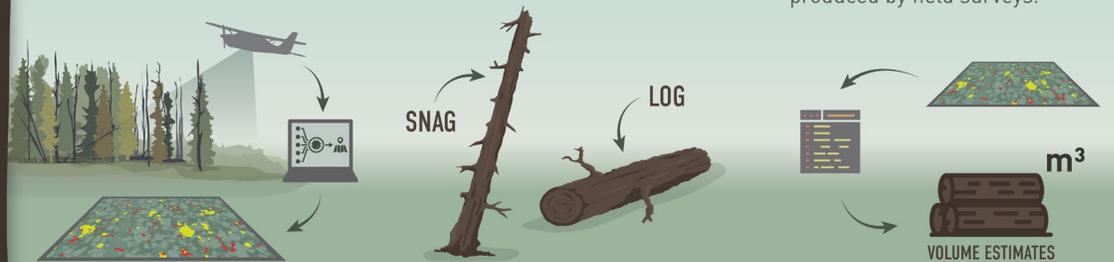


Researchers are advancing the automatic detection of coarse woody debris in remote sensing imagery. Key findings include:

Coarse woody debris is readily visible in standard remote sensing imagery and can be accurately mapped with machine-learning.

LiDAR can be useful for distinguishing snags from logs, but is not necessary to achieve accurate detection results.

Maps of coarse woody debris objects can be paired with empirical models to produce volume estimates that are comparable to those produced by field surveys.



Accurate maps of coarse woody debris can be used by researchers, foresters, land managers, and government agencies for a variety of applications including fire hazard assessments and woodland caribou habitat restoration.

 BOREAL  
ECOSYSTEM  
RECOVERY &  
ASSESSMENT  
LOPES QUEIROZ ET AL., 2019  
LOPES QUEIROZ ET AL., 2020

INFORMATION FOR POLICYMAKERS

Coarse woody debris is a natural component of forest ecosystems that affects nutrient cycling, carbon storage, wildfire fuel, microhabitats, and overall forest structure. However, mapping and estimating volumes of coarse woody debris can be difficult since amounts vary between ecosystem types and are affected by disturbances including fire, insects, and disease.

BERA researchers have developed remote-sensing workflows for creating accurate maps of coarse woody debris. These strategies can be used by researchers, foresters, land managers, and government agencies for a variety of applications including fire hazard assessments and woodland caribou habitat restoration.

To read the peer-reviewed articles behind this research, [click here](#) and [here](#)

[Click here](#) to download a copy of the infographic.

