



# Boreal Ecosystem Recovery and Assessment 3<sup>rd</sup> Annual Fall Workshop

*Date / time* 11/22/2018 8:00 AM | *Location* Lister Center, Maple Leaf Room, University of Alberta

## Workshop Overview

### Workshop Kick-Off

The workshop will kick-off with welcoming remarks by Greg McDermid to set the stage for a day of research presentations and meaningful dialogue.

### Research Highlights

BERA researchers will provide brief lightning-talk updates of their work to date across three sessions. Each session is thematically grouped by the main BERA research areas. Introductory overview talks will provide context to each session.

### Interactive Poster Sessions

Participants will be given time to engage with BERA researchers in three interactive poster sessions: one following each round of lightning talks. BERA researchers will attend their posters to answer questions and talk about their projects.

### Guided Roundtable Discussion

Moderated discussion will be held after each poster session to encourage dialogue between the BERA researchers, partners, and collaborators in order to synthesize the individual feedback from each session for the full group. Another moderated discussion round will be held at the end of the workshop to discuss the ongoing research activities through a wider lens and to brainstorm on continuing and new paths for future of BERA.

## Program at a Glance

| Time          | Topic (Session Lead)  |
|---------------|---|
| 08:00 – 08:30 | Coffee, Setup, and Registration   |
| 08:30 – 08:40 | <b><u>Session I: Introductions and Welcoming Remarks (Greg McDermid)</u></b>  |
| 08:40 – 09:10 | <b><u>Session II: Research Highlights on Footprint &amp; Vegetation Mapping (Guillermo Castilla)</u></b>  |
| 09:10 - 10:00 | Poster Session II - with Refreshments   |
| 10:00 – 10:30 | Discussion Round II – Footprint/Vegetation Mapping  |
| 10:30 – 11:00 | <b><u>Session III: Research Highlights on Abiotic Footprint Conditions – a) Environmental Effects (Caroline Franklin) and b) Technical Innovation (Steve Liang)</u></b>         |
| 11:00 – 11:45 | Poster Session III  |
| 11:45 – 12:15 | Discussion round III – Abiotic Conditions   |
| 12:15 – 1:20  | Lunch Break   |
| 1:20 – 2:00   | <b><u>Session IV: Research Highlights on Ecological Footprint Effects – a) Vegetation Communities and Trajectories (Scott Nielsen) and b) Wildlife Impacts (Erin Bayne)</u></b> |
| 2:00 – 2:45   | Poster Session IV   |
| 2:45 - 3:15   | Discussion round IV – Vegetation Trajectories & Wildlife Impacts  |
| 3:15 – 3:30   | Break – with Refreshments   |
| 3:30 - 4:15   | <b><u>Session V: Round Table Discussions – the Future of BERA (Greg McDermid and Julia Linke)</u></b>   |
| 4:15 – 4:30   | Synthesis & Concluding Remarks  |



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## Agenda

| Time  | Topic  | Presenter  |
|---|--|--|
| 08:00 – 08:30   | Coffee, Setup, and Registration  |  |
| <b>Session I: Workshop Kick-Off</b>   |  |  |
| 08:30 – 08:40   | <b>Introductions and Welcoming Remarks</b>   | <b>Greg McDermid</b> (BERA PI),<br>University of Calgary             |
| <b>Session II: Research Highlights on Footprint &amp; Vegetation Mapping</b>  |  |  |
| 08:40 – 09:10   | <b>Session II Overview on Footprint &amp; Vegetation Mapping</b>   | <b>Guillermo Castilla</b> (BERA Co-PI)<br>Canadian Forest Service    |
|   | 1. <i>Seismic Line Mapper</i>  | <b>Silvia Losada</b> (MSc Student)<br>University of Calgary          |
|   | 2. <i>Remote Sensing of Coarse Woody Debris in Caribou Habitat</i>                                       | <b>Gustavo Lopes Queiroz</b> (MSc Student)<br>University of Calgary  |
|   | 3. <i>Comparison of Photogrammetry and LiDAR for Forest Canopy Gap Detection</i>                         | <b>Annette Dietmaier</b> (BERA Collaborator)<br>Ludwig-Max. Uni.     |
|   | 4. <i>Remote Sensing Tools for Conifer Stocking Assessment - Part 1: Manual Softcopy Interpretation</i>  | <b>Greg McDermid</b> (BERA PI),<br>University of Calgary             |
|   | 5. <i>Remote Sensing Tools for Conifer Stocking Assessment – Part 2: Automated Object-Based Analysis</i> | <b>Man Fai Wu</b> (MSc Student)<br>University of Calgary             |
|   | 6. <i>Semisupervised Object Detection in UAV images</i>  | <b>Michael Fromm</b> (BERA Collaborator)<br>Ludwig-Max.Uni.          |
|   | 7. <i>Estimating the Height of Conifer Seedlings in Recovering Linear Disturbances with UAV</i>          | <b>Michelle Filiatrault</b> (RS Analyst),<br>Canadian Forest Service |
| 09:10 - 10:00   | <b>Poster Session II on Footprint &amp; Vegetation Mapping – with Refreshments</b>                       |  |
| 10-10 – 10:30   | <b>Discussion Round Session II on Footprint &amp; Vegetation Mapping</b>                                 |  |
| <b>Session III: Research Highlights on Abiotic Footprint Conditions:<br/>a) Environmental Effects and b) Technical Innovation</b> |  |  |
| 10:30 - 11:00   | <b>Session III b) Overview on Environmental Effects</b>  | <b>Caroline Franklin</b> (PDF)<br>University of Alberta              |
|   | 1. <i>Abiotic Conditions of Seismic Lines</i>  | <b>Caroline Franklin</b> (PDF)<br>University of Alberta              |

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## Agenda, Cont...

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| ...   | 2. <i>Impact of Linear Disturbances on Soil Characteristics</i>  | <b>Scott Davidson</b> (PDF)<br>University of Waterloo                 |
|   | 3. <i>Mapping Groundwater Table in Alberta's Boreal Region using Remote Sensing Techniques</i>                           | <b>Kiran Basran</b> (MGIS Student)<br>University of Calgary           |
|   | 4. <i>Evaluating Boreal Peatland Vegetation Communities and Carbon Exchange on Sites Impacted by Linear Disturbances</i> | <b>Maria Strack</b> (BERA Collaborator)<br>University of Waterloo     |
|   | <b>Session III a) Overview on Technical Innovations</b>  | <b>Steve Liang</b> (Co-PI)<br>University of Calgary                   |
|   | 5. <i>Boreal Forest Monitoring using IoT</i>   | <b>Kan Luo</b> (PhD Student)<br>University of Calgary                 |
|   | 6. <i>Open Standard IoT Prototype for Vegetation Recovery Monitoring</i>   | <b>Sara Saeedi</b> (PDF)<br>University of Calgary                     |
|   | 7. <i>Automatically Predicting Micro-climates using Dynamic Time Warping</i>   | <b>Soroush Ojagh</b> (PhD Student)<br>University of Calgary           |
| 11:00 – 11:45   | <b>Poster Session III on Abiotic Footprint Sensing &amp; Conditions</b>  |   |
| 11:45 – 12:15   | <b>Discussion Round Session III on Abiotic Footprint Sensing &amp; Conditions</b>  |   |
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| 12:15 – 13:20   | <b>Lunch Break</b>   |   |
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| <b>Session IV: Research Highlights on Ecological Footprint Effects:</b>   |  |   |
| <b>a) Vegetation Communities and Trajectories and b) Wildlife Impacts</b> |  |   |
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| 13:20 - 14:00   | <b>Session IV a) Overview on Vegetation Communities and Trajectories</b>   | <b>Scott Nielsen</b> (Co-PI)<br>University of Alberta                 |
|   | 1. <i>Forest Recovery and Trajectories on Seismic Lines</i>  | <b>Angelo Filicetti</b> (PhD Candidate)<br>University of Alberta      |
|   | 2. <i>Influence of Microtopographic Complexity and Depression on Seismic Line Forest Regeneration</i>                    | <b>Cassandra Stevenson</b> (BSc Student)<br>University of Alberta     |
|   | 3. <i>Effects of Mounding on the Understory Regeneration of Seismic Lines in Treed Peatlands</i>                         | <b>Laureen Echiveeri</b> (BERA collaborator)<br>University of Alberta |
|   | 4. <i>Well Pad Regeneration in Post-Fire Jack Pine (<i>Pinus banksiana</i>) Forest</i>                                   | <b>Ryan LaPointe</b> (BERA collaborator)<br>University of Alberta     |
|   | 5. <i>Remote Sensing-Based Characterization of Harvest Area Regeneration: Preliminary Results</i>                        | <b>Jennifer Hird</b> (BERA collaborator)<br>University of Calgary     |

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## Agenda, Cont...

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| ...  | <b>Session IV b) Overview on Wildlife Impacts</b>  | <b>Erin Bayne</b> (Co-PI)<br>University of Alberta  |
|  | 6. <i>Monitoring Responses of Birds to Anthropogenic Habitat Disturbances using Sound Localization</i>   | <b>Richard Hedley</b> (PDF)<br>University of Alberta  |
|  | 7. <i>Canada Warbler Response to Linear Feature Regeneration</i>   | <b>Jocelyn Gregoire</b> (MSc Student)<br>University of Alberta  |
|  | 8. <i>Disentangling the Effects of Vegetation Disturbances and Chronic Industrial Noise in Songbirds</i> | <b>Natalie Sánchez</b> (PhD Student)<br>University of Alberta   |
|  | 9. <i>Predicting Songbird Occupancy using LiDAR-derived Structural Metrics</i>                           | <b>Brendan Casey</b> (BERA collaborator)<br>University of Alberta   |
| 14:00 – 14:45  | <b>Poster Session IV on Ecological Footprint Effects</b>   |   |
| 14:45 – 15:15  | <b>Discussion Round Session III on Abiotic Footprint Sensing &amp; Conditions</b>                        |   |
| 15:15 – 15:30  | <b>Afternoon Break – with Refreshments</b>   |   |
| <hr/> <b>Session V: Round Table Discussions - the Future of BERA</b> <hr/> |  |   |
| 15:30 - 16:15  | <b>Moderated Open Discussion</b>   | <b>Greg McDermid</b> (BERA PI) and <b>Julia Linke</b> (BERA Science Coordinator)<br>University of Calgary |
| 16:15 – 16:30  | <b>Synthesis &amp; Concluding Remarks</b>  | <b>Greg McDermid</b> (BERA PI)  |
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## Participant List

| <b>Participant/Organization</b>                     | <b>Position/Affiliation</b>                                   |
|---|---|
| <u>Alberta Government</u>                           |   |
| <b>Shane Patterson</b>                              | Science and Technology Specialist (Environment & Parks)       |
| <u>Alberta Biodiversity Monitoring Institute</u>    |   |
| <b>Jahan Karyieva</b>                               | Director (Geospatial Center)                                  |
| <b>Melanie Dickie</b>                               | Research Coordinator (Caribou Monitoring Unit/RICC)           |
| <b>Natascha Annich</b>                              | Field Coordinator (Caribou Monitoring Unit/Bioacoustics Unit) |
| <b>Craig DeMars</b>                                 | Post-doctoral Fellow (Caribou Monitoring Unit/RICC)           |
| <u>Alberta Energy Regulator</u>                     |   |
| <b>Todd Shipman</b>                                 | Landscape and Geological Hazards Manager                      |
| <u>Alberta-Pacific Forest Industries, Inc.</u>      |   |
| <b>Margaret Donnelly</b>                            | Forest Ecologist  |
| <b>Elston Dzus</b>                                  | Forest Ecologist  |
| <u>Canadian Forest Service/NRCAN</u>                |   |
| <b>Guillermo Castilla</b>                           | Research Scientist (BERA PI Team)                             |
| <b>Michelle Filiatraut</b>                          | Remote Sensing Analyst (BERA Castilla Team)                   |
| <u>Canadian Natural Resources Ltd.</u>              |   |
| <b>Jon Gareau</b>                                   | Environmental Coordinator                                     |
| <u>Cenovus Energy</u>                               |   |
| <b>Michael Cody</b>                                 | Senior Advisor (Land & Biodiversity)                          |
| <u>Conoco Phillips Canada</u>                       |   |
| <b>Robert Albricht</b>                              | Land Stewardship Coordinator                                  |
| <u>Ludwig-Maximilian University, Munich Germany</u> |   |
| <b>Matthias Schubert (remote)</b>                   | Research Scientist Database Systems                           |
| <b>Ralf Ludwig (remote)</b>                         | Professor for Applied Physical Geography/Env. Monitoring      |
| <b>Annette Dietmaier (remote)</b>                   | MSc Student (McDermid/Castilla Team Collaborator)             |
| <b>Michael Fromm (remote)</b>                       | PhD Student (McDermid/Castilla Team Collaborator)             |
| <u>MEG Energy Corp.</u>                             |   |
| <b>Caroline Hann</b>                                | Field Environment and Regulatory Coordinator                  |
| <u>OGL Engineering</u>                              |   |
| <b>Brenden Birdsell</b>                             | Business Development Manager                                  |
| <u>University of Alberta</u>                        |   |
| <b>Randi Lupardus</b>                               | Postdoctoral Fellow (Anne McIntosh )                          |
| <b>Erin Bayne</b>                                   | Professor (BERA PI Team)                                      |

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| <b>Lionel Leston</b>                       | Post-doctoral Fellow (Bayne Team)                              |
| <b>Richard Hedley</b>                      | Post-doctoral Fellow (Bayne Team)                              |
| <b>Jocelyn Gregoire</b>                    | MSc Student (Bayne Team)                                       |
| <b>Natalie Sánchez Ulate</b>               | PhD Student (Bayne Team)                                       |
| <b>Brendan Casey</b>                       | MSc Student (Bayne Team Collaborator)                          |
| <b>Scott Nielsen</b>                       | Assoc. Professor (BERA PI Team)                                |
| <b>Caroline Franklin</b>                   | Post-doctoral Fellow (Nielsen Team)                            |
| <b>Angelo Filicetti (remote)</b>           | PhD Candidate (Nielsen Team)                                   |
| <b>Laureen Echiveeri</b>                   | PhD Student (ABC PhD Student – BERA Nielsen Team Collaborator) |
| <b>Cassandra Stevenson</b>                 | M.Sc. Student (Nielsen Team)                                   |
| <u>University of Calgary</u>               |  |
| <b>Greg McDermid</b>                       | Professor (BERA PI Team)                                       |
| <b>Julia Linke</b>                         | Science Coordinator (BERA PI Team)                             |
| <b>Mustafiz Rahman</b>                     | Research Scientist/Technician                                  |
| <b>Jennifer Hird</b>                       | Research Technician  |
| <b>Silvia Losada</b>                       | M.Sc Student (McDermid Team)                                   |
| <b>Gustavo Lopez</b>                       | M.Sc Student (McDermid/Castilla Team)                          |
| <b>Man Fai Wu</b>                          | M.Sc. Student (McDermid Team)                                  |
| <b>Kiran Basran</b>                        | M. GIS Student (McDermid Team)                                 |
| <b>Steve Liang</b>                         | Assoc. Professor (BERA PI Team)                                |
| <b>Sara Saeedi</b>                         | Post-doctoral Fellow (Liang Team)                              |
| <b>Kan Luo</b>                             | PhD Student (Liang Team)                                       |
| <b>Soroush Ojagh</b>                       | PhD Student (Liang Team)                                       |
| <u>University of Waterloo</u>              |  |
| <b>Maria Strack</b>                        | Professor for Geography and Environmental Management           |
| <b>Scott Davidson (remote)</b>             | Post-doctoral Fellow (Strack Team)                             |
| <u>Other Academic collaborators/Alumni</u> |  |
| <b>Geoff Sherman</b>                       | Senior Forest Ecologist  |
| <b>Scott Wilson</b>                        | Wildlife Ecologist   |